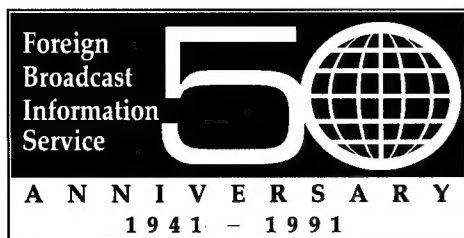


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***USSR: Science &
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Science & Technology

USSR: Science & Technology Policy

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Alferov on S&T Establishment's Problems With Market Transition

917A0171A Moscow IZVESTIYA (Union edition)
in Russian 13 Jul 91 p 1

[Interview with Vice President of the USSR Academy of Sciences Zhores Ivanovich Alferov, director of the Physical Technical Institute imeni A. F. Ioffe and chairman of the Leningrad Scientific Center of the USSR Academy of Sciences, by IZVESTIYA special correspondents V. Nevelskiy and K. Smirnov; date and place not given: "For Pocket Expenses. The Splendor and Poverty of Academic Science During the Transition to the Market"; first paragraph is IZVESTIYA introduction]

[Text] When Academician Zh.I. Alferov, director of the Physical Technical Institute imeni A.F. Ioffe, came into the rights of chairman of the Leningrad Scientific Center of the USSR Academy of Sciences (LNTs), he granted his first interview to IZVESTIYA, having shared with us his intentions and plans. And although now it is not the custom to "monitor" the implementation of what has been planned, we still took the risk to return to that two-year-old publication, for the credo, which was expressed at that time by the subject of our interview—a world-famous scientist and vice president of the union Academy of Sciences—to this day has also not become obsolete.

[IZVESTIYA] Zhores Ivanovich, against the background of many "scientific and technical" joint ventures (SP's), which are squandering domestic raw materials for the most part dirt cheap, your idea of Tekhnoeksan (Technical Export of the Academy of Sciences)—a joint venture of the Leningrad Physical Technical Institute and the Austrian Semicon firm—seemed to us both promising and farsighted. The goal was to engage in a test of strength with competitors on the world market and to appear on it with applied developments, for which the latest achievements of physics are the basis. You said that this was a quite risky venture. Two years have passed. Was the risk justified?

[Alferov] Certainly. The Physical Technical Institute has been known for a long time as a most prominent scientific center of the country. Its authority in the world was always high. But today, owing, in particular, to Tekhnoeksan, it is even higher. We have appeared on the world market with our own semiconductor lasers, new systems in the area of holography, and plasma diagnosis systems. And they enjoy there a very great demand.

The scale of activity of our firm comes to several hundred thousand dollars a year—rather good help for present times. We were able to acquire with the earned assets personal computers, facsimile machines, xerox machines, and other advanced office equipment and to send tens of our scientists on foreign business trips to conferences, symposiums, and seminars.

I emphasize: Tekhnoeksan deals in very complex science-intensive products. It offers both the world and the

domestic markets the latest scientific developments. This is an entirely cost accounting organization, which within the country earns rubles, while abroad it earns currency that we need so much. Apart from all else, Tekhnoeksan has become for us an excellent business school and has taught us much. The establishment of the Soviet-Swedish Plasma-Dynamics enterprise will be the next step.

Our scientific associate V. Kuznetsov worked at one of the research centers of Sweden. Together with Swedish scientists he received a patent for new technological processes that use plasma. After returning home, he transferred to the Physical Technical Institute his rights to this patent, which enabled us to reach an agreement with the Swedes on the joint production of units for the plasma processing of materials in microelectronics. The cost of each of them is hundreds of thousands of dollars, but this price is not scaring away potential buyers. More than 10 clients have already expressed the desire to purchase our equipment.

We are also conducting serious talks on the establishment of joint ventures in the area of optoelectronics with South Korean firms, which came themselves to us. The talks have been going on now for more than a year. The interest in their successful conclusion is mutual, inasmuch as cooperation between the USSR and South Korea is mutually advantageous. But our partners from the very start intended to get too much, while having offered practically nothing in return. The experience of scientific and technological business, which was gained in Tekhnoeksan, helped us to understand this. We now clearly realize that our science is too precious a thing to thoughtlessly sell off its achievements left and right.

[IZVESTIYA] Commercial activity on the world market is the domain of professionals. It is difficult here for amateurs, try as they may, to count on success. Are many scientific organizations not throwing themselves into the deep waters of business too hastily, with reliance only on our Russian "off-chance"?

[Alferov] You are right, now many have this disease. Of course, in order to avoid regrettable blunders in commercial activity, it is necessary to enlist in it without fail highly skilled professionals.

I have visited many countries as a member of governmental and academic delegations. And I have noticed: On our part prominent scientists usually take part in the talks, while on the part of partners prominent businessmen do.

Alas, in the country an acute shortage of such personnel is being felt everywhere. And still we are finding them. For example, we are cooperating closely with the chair of the economics faculty of Leningrad State University, which Prof. S. Valdaytsev directs. He is helping us very much with advice and is advising us at talks with foreign firms.

The foreign economic relations department, in which an enormous amount of work has fallen to the lot of economist V. Maksimov, has already appeared at the institute. We came to the conclusion that the Physical Technical Institute needs without fail an economist specializing in international affairs and needs an entire group of high-class specialists, who could engage professionally in scientific and technical business.

Of course, I am not an advocate of turning institutes of the Academy of Sciences into some semiproduction, commercial companies. They should first of all conduct basic research. But today, on the threshold of the market economy, we cannot afford the luxury of ignoring "rough" work and any possibility of embodying scientific achievements in specific developments and know-how.

Incidentally, for many years the failing of academic developments consisted precisely in the fact that they were exclusively laboratory technologies that needed much operational development. The flow sheet was as follows: academic laboratory—subdivision of a sectorial scientific research institute—pilot production. It fit poorly in the practice of our centralized planning and worked, as a rule, only within ministries. Academic laboratories with their scientific resources proved to be, in reality, on the fringe of technical progress. Only when the effectiveness of basic ideas was visible, as they say, to the naked eye, did industrial ministers hold out their hand to them.

[IZVESTIYA] Now, when our science is appearing on the world market, this problem is acquiring particular urgency. For the support of the entire chain from the technical idea to the product in a market model requires considerable capital investments. Where is one to get them?

[Alferov] So far western firms are not risking large investments. While we are interested precisely in having companies, which turn scientific developments into industrial technologies and into a commodity, located on our territory. I think that with the amendment of union legislation, which permits foreigners to have property in the USSR, positive changes will occur in this area as well.

[IZVESTIYA] In the last year the economic situation in the country worsened drastically. State finances are disorganized. Apparently, all this could not but affect the material supply of basic science. So how is the academic institute getting on today?

[Alferov] It is getting on with great difficulty. This is the most difficult year in the entire history of the Physical Technical Institute. And it is not even that the money for wages has begun to be received late. I want to recall several figures from the union budget: 12.5 billion rubles [R] have been allocated for scientific research in the interests of the Ministry of Defense, the conversion program, which envisages the financing of organizations that serve defense sectors, will swallow up another R8.3

billion. For comparison: R1.2 billion were released to institutions of the USSR Academy of Sciences for basic research (and this is given the furious jump of prices!).

So that the assets, which academic institutes have, are very little. The Basic Research Fund, which was established by the Ukase of the USSR President, could play its role. But for the present it still exists only on paper.

I will add to this that the amounts of contracts with industry have decreased appreciably. It, after all, is also in a most difficult position. Although for the Physical Technical Institute these contracts were never the main source of financing, they still made up nearly a fifth of our budget, but have now decreased by one-half.

The following circumstance is very significant: The base financing from the Academy of Sciences (the same R1.2 billion), which has been dispersed to hundreds of scientific institutions, does not cover even the spending on the wage and the maintenance of institutes (electricity, water, heating, the rental of premises). Meanwhile insurance deductions and overhead have increased sharply. As a result the world-famous Physical Technical Institute has this year a financial "hole" in the amount of R10-15 million. With what is one to plug it? Ask me about something a little easier.

[IZVESTIYA] It appears that given our present poverty it would make sense to concentrate budget allocations on the most important, key items.

[Alferov] Perhaps. In the present situation the country can no longer afford to maintain the entire scientific potential that it has. What is being allocated does not suffice science even "for pocket expenses."

[IZVESTIYA] Does it turn out that the country cannot afford basic science?

[Alferov] I would not say it that bluntly. My personal point of view is: We have a large number of scientific centers and scientific schools, which are national and world property. One must not sacrifice them under any circumstances. It is necessary to seek a victim elsewhere.

[IZVESTIYA] During our last meeting you mentioned casually the brain drain. Your arguments were at that time more of a theoretical nature and were perceived as a kind of warning for tomorrow. Tomorrow has come. The previously theoretical problem has acquired tangible and very alarming features and has become a reality. How are both the Leningrad Scientific Center and the Physical Technical Institute solving it or how do they intend to solve it?

[Alferov] First of all about reality. This problem is defined specifically by two coordinates: by the new Law on Entry and Departure, as well as by the unprecedented—as compared with the recent past—scale of scientific cooperation with the entire world. For example, the Physical Technical Institute now receives annually about 800 foreign scientists—twofold more

than several years ago. We are sending abroad in a year tenfold more of our associates—over 600 people.

A large number of people of the Physical Technical Institute have left for other countries under contracts for two to three years. Several of the very good scientists have decided to remain there for a permanent job. But it is hardly worth making a tragedy out of this. The scientific personnel of the Physical Technical Institute actually enjoy very great respect both in Europe and in the United States.

During one of my last trips to the United States I got the feeling that I, in going from university to university, was inspecting groups of researchers at affiliates of the Physical Technical Institute. And telephone calls of deans of physics and electrical engineering faculties with the request to send undergraduates and undergraduates who had graduated from base chairs, our graduate students, and young scientific associates followed me literally everywhere.

I do not think that today there is a great danger of the mass departure of our venerable scientists for a permanent job. At the same time young scientists are attracting abroad close attention. American universities are willing at their expense to offer them a job for a year, two years, three years, and longer. The demand is unlimited.

But here is an interesting fact. One of the leading scientists, who had already been working a year under contract in the United States, said to me: "In this year I earned here more money than during my entire preceding life. As for intellectual life, I live in America a far poorer and more boring life than at home."

Why? Because there in the West such schools as the Physical Technical Institute, the Physics Institute of the USSR Academy of Sciences, the Institute of Physics Problems, and the Institute of Solid-State Physics are such a rarity. These are centers, of which there are very few in the world. And suppose we live relatively modestly on the everyday level. Suppose we do not have such experimental opportunities as western scientists have. But we have national laboratories, of which there are no equals anywhere.

Subdivisions of this sort in the United States are for the most part laboratories with applied military emphases, like the Livermore Laboratory. At universities science is highly dispersed. Americans only recently took up the establishment there of powerful scientific research centers, which our best academic institutes have. For example, the same Physical Technical Institute gives any of its associates the unique opportunity to obtain advice in the walls of the institute on any problem of modern physics. At the expense of one or another form of the state budget we can conduct both basic and fundamentally new applied research. Precisely for this reason so many offers are coming to us from western firms that are interested in the purchase of our developments.

Perhaps, I will seem to be a carp-idealist, but it seems to me that for a person, who was born and lived a considerable part of his life in the country, it is not that easy to change its entire customary style due to the fact that abroad he will have a higher wage and substantially better living conditions. Far from everyone will agree to this. Therefore, I also say: If we can create, though modest, but nevertheless adequate conditions for a comfortable existence, with an opportunity to work efficiently in our own scientific collective, a person will not go anywhere. Moreover, the majority of our scientists, even when going abroad under contract, do not intend at all to lose their status of scientific associate of the Physical Technical Institute.

[IZVESTIYA] In short, is the problem not so urgent for your institute and ones like it?

[Alferov] Yes, but for academic science as a whole this is, of course, a serious threat, which one will not succeed in eliminating in a single hour. However, it is possible to alleviate it, if the research potential of the country is supplemented more intensively and in a higher quality manner through the higher school. And here the experience of Petr I, who established the triad of the grammar school, the university, and the academy, would be very useful to us.

Organization of RSFSR Academy of Natural Sciences Outlined

917A0162A Moscow LITERATURNAYA GAZETA
in Russian 12 Jun 91 p 6

[Article by Prof. Sergey Kapitsa under the rubric "At the Crossroads of Opinions": "The Year of Birth Is 1991"—first paragraph is LITERATURNAYA GAZETA introduction]

[Text] A new association of scientists in the country—the RSFSR Academy of Natural Sciences—has been established. The first attempt, which was made a year ago, when the Academy of Sciences of Russia attempted to detach from the "large" academy, was unsuccessful. And first of all because the idea of separation from the whole always makes it incumbent to follow the models of the maternal organism. Today an alternative is required. Moreover, an organizational alternative—science, after all, is unified: Neither Soviet nor Russian or English science exists, just as there is no alternative physics or biology, science of the people or state science.

The embryo of the Academy of Natural Sciences was found in the multitude of scientists, whose achievements have been commended by certificates on discoveries. The authors of about 400 discoveries also made up its nucleus. Everything began with the formation of four sections—physics, chemistry, the earth sciences, and the biomedical sciences. However, it soon became clear that one also cannot manage without a section of mathematics, cybernetics, and information science. Finally, the necessity of incorporating the humanities was also realized. It is possible to regard as a happy find the

formation of the section entitled "The Russian Encyclopedia." A brilliant staff of humanities scholars, whose tasks in many respects are governed by the most urgent need to realize and express social thought now, when a profound crisis has befallen our social sciences and ideology, has been assembled under this broad appeal. Perhaps, after the economic development of the country the problem of extensive spiritual renewal holds first place. Recent events and the election to the USSR Academy of Sciences clearly showed: It is difficult to expect from it any profound restructuring in the area of the humanities and a creative contribution to the development of the new culture.

The basis of the academy is its members. And that is why the election, which was held in the middle of March, was our first concern. Scientists, who were selected by collectives of scientific personnel from all regions of the federation, were enlisted as electors. As a result a very strong and interesting composition of the academy was formed: 250 full members and 290 corresponding members.

Soon after the election, on 5 April 1991, the RSFSR Academy of Natural Sciences was registered by the Ministry of Justice of Russia. Prof. D. Mineyev, founder of the academy, a well-known mineralogist and geochemistry, and the author of a number of discoveries, was unanimously elected president. Prof. N. Vorontsov, a biology scholar with a wide range of scientific interests, Prof. O. Kuznetsov, a geophysicist, and the author of these lines became the vice presidents.

What tasks is the new academy setting for itself? First, it should analyze the state and formulate a strategy of the development of the basic and applied research, which is being conducted in Russia, and introduce its results. Further, it should act as an expert of programs and projects in the area of the natural sciences and support the most significant research and the collectives of scientists who are performing this work. It will have to devote much effort to the protection of intellectual property and the social rights of scientists. Finally, among its most important tasks it also sees the revival of humanities education in Russia and its culture, the overcoming of the gap between the higher school and science, and the extensive development of educational and information activity.

For the accomplishment of these tasks the new academy will also seek new means. A rigid system of institutes, which is characteristic of the USSR Academy of Sciences, the academies of sciences of the union republics, and sectorial academies, is not envisaged in it. At the basis of our activity we would like to see problems and important specific tasks, in the accomplishment of which it is necessary to enlist scientists of different specialties, departments, and intellectual traditions. In essence, many of the tasks have already been formulated by the government of the republic, others can and should be proposed by scientists. It is possible to solve such problems by having agreed to the establishment of temporary

collectives or kinds of special-purpose mini-institutes. Here the mutual understanding and cooperation of the association of scientists with the government of Russia are important. Whether it will seek support for the new, democratically organized association or will take the old path, relying on the bureaucratically formed system of state science, which is closed in monopoly structures and institutes, is a far from trivial question. World and domestic experience shows: Only science, which is separate to a certain extent from the state, can in the end honestly fulfill its duty to society and serve the country and its highest interests. That is why the initiative of the establishment of the academy is so important.

We were often witnesses of the service of science to the monopoly interests of departments. Now the politicization of society may threaten it. Under these conditions the independence of science and scientists is acquiring particular importance. In essence, the Ukase of the president on the giving of a special status to the USSR Academy of Sciences and its protection pursues precisely this goal. Another danger is the commercialization of science. But neither culture nor basic science can be based on primitively understood financial self-sufficiency. Financing can and should regulate the development of science, but the goal of basic science, just as of culture, is to serve the highest ideals of society, where financial criteria simply cannot be a basis for opinions about success. Here the public opinion of scientists of the country and the world is becoming decisive.

Interdisciplinary problems should acquire great importance for the new academy. First of all in the area of ecology and environmental protection. The academy intends to enlist scientists of different departments extensively in ecological themes.

Two problems cannot but attract the attention of the new academy. This is the urgent need for the demilitarization of science. However paradoxical, it is necessary to understand this not as the direct curtailment of the scientific reserve of defense. Precisely it should be reduced last of all, for in the struggle of minds we should not lose our positions. It is possible to see the militarization of science in how, in essence, through the military-industrial complex in our country much research in the area of basic science: high-energy physics and space, plasma, astronomy, and laser physics, which is not directly connected with military tasks, was often financed and supported. This has also been preserved to this day. How will such research, which is most important for the prospects of the country and its potential, be supported today and, what is the main thing, tomorrow? Will it remain a kind of hobby of the military-industrial complex or be continued for the sake of the major, fundamental problems, which were posed here? Is it possible not only to settle, but even also to discuss similar questions within the existing structures? Or will they require for their settlement new, alternative approaches? The government and the Supreme Soviet

are to decide this. However, it is obvious that only the competition of various approaches will yield the desired result.

Another problem, which requires new, alternative approaches, is education. It is gratifying that the professors of the higher school are extensively represented in our academy. Today, as never before, its unification with science is important. People ask often and justifiably: How are the achievements of basic science introduced in our country? Perhaps, precisely the system of education and the training of personnel of the highest skill through graduate studies should also become the main channel for introduction. Unfortunately, the many years of separation of the higher educational institution and science have led to substantial losses. Life will show whether the new association will be able to help overcome it. However, new textbooks and new bold initiatives in the area of education are urgently needed. Thus, for example, an "open" television university is contemplated. Much attention should be devoted to the noteworthy program of the revival of the first Russian universities, which was advanced by the president of the academy.

As was already said, a great role belongs to "The Russian Encyclopedia." The government of the republic is promising it publishing assistance, and we are counting on the development of the broad enlightening and educational activity of this department of the academy. Here the support of the ethnic cultures of Russia should hold a special place. In particular, those cultures that do not have a territorial affiliation. Among the sciences at our academy we would also like to see demography. For in our country it as if does not exist. The journal on demography was shut in 1938, the results of censuses were classified, while at the USSR Academy of Sciences there is not one demographer. But is it possible to engage in a national policy without accurate information about the growth of peoples, their migration, and a quantitative analysis of those phenomena, without which it is impossible to solve the problems of health care, education, and culture?

Much purposeful educational activity, which is called upon to fill the formed ideological vacuum, is required. The natural sciences and the humanities should actively cooperate in it. The academy should take an irreconcilable position toward antiscientific and mystical trends, which now are so widespread. The present onset of superstitions and pseudoscientific notions are a serious symptom of the spiritual breakdown of society.

How will the new academy interact with the USSR Academy of Sciences? The question goes beyond personalities and the position of individual members. It is good that there is an "overlap" in the membership of these scientific associations. At the same time the new academy is proud of the vast galaxy of its prominent full members, who for some reasons or others were not claimed by the USSR Academy of Sciences. A special role and special place belong to the "large" academy—and the new academy, undoubtedly, will take this into

account. The unity of science within the republic should be an important priority, inasmuch as there are forces that are striving to pull science apart. Ecology and transportation, power engineering and communications do not have territorial boundaries, an orientation toward them would help to unite our intellectual forces.

Another line of unification is the Russian-speaking scientific and cultural Diaspora. Twenty Nobel Prize laureates, who are emigrants from Russia, became the first honorary members of the academy. The unification within the new academy of scientists, literary people, and figures of art and culture from throughout the world, for whom their historical roots are valuable, in our country is very urgent. Especially now, when the forces of isolationism and national isolation are waking up. And it is difficult to imagine our joining of the European home and the world scientific and cultural community without having restored contacts with those people who at one time, often not of their own will, left the homeland.

Incidentally, a meeting of representatives of the academies of sciences of Europe was recently held in Menago, Italy, on the initiative of the European Academy. At it their place in the modern world and their tasks were examined. Much interest was displayed in the newborn Academy of Russia—its program objectives to a significant extent satisfy the new requirements of the development of science. Attention was directed to the advisability of the more extensive participation of European academies and the European Academy in the Helsinki process, when on the restructured political map of Europe it was necessary to develop scientific cooperation in a new way. In particular, scientists of the East European countries, who have interpreted all over again all the importance of close contacts with Soviet science, called for this.

Contrary to traditions our still quite young academy will not pay its members. Rather it is the other way round—it awaits membership dues from them. And it hopes for support and understanding on the part of other scientific organizations of the country, on the part of the government of the republic and its Supreme Soviet, and, of course, first of all, from the people and society, whose goals and tasks it is prepared to serve.

Laverov Interview on Soviet Science Lag

917A0161A Moscow *RABOCHAYA TRIBUNA*
in Russian 28 May 91 pp 1, 2

[Interview with USSR Deputy Prime Minister Academician Nikolay Pavlovich Laverov by Vladimir Lagovskiy under the rubric "A Topical Interview"; date and place not indicated: "Why the Scientific and Technical Revolution Passed Over the USSR. USSR Deputy Prime Minister Academician Nikolay Laverov Answers the Questions of *RABOCHAYA TRIBUNA*"—first two paragraphs are *RABOCHAYA TRIBUNA* introduction]

[Text] To start with, a few details. In the 1970's the world realized: If scientific and technical strategy is not changed abruptly, it will be difficult to survive—ecological and food problems will torture people to death. In the West this understanding entailed a real revolution. Technologies, which save power and natural resources, are a unique result of the 15-year reconstruction of industrial and agricultural production on the basis of the latest achievements of scientists and specialists.

Six years ago, it would seem, we also came to our senses. But, alas, only in words. At the famous conference of June 1985 on scientific and technical progress the correct directions were outlined. People began to speak pleasantly, but never did anything. The new government, which arrived in 1989, also was unable to advance the matter. While now the impression is forming that they altogether forgot about scientific and technical progress. They are no longer saying words about it—politics has overshadowed everything. The result of our "revolution": the power-output ratio and the metal content are increasing. More and more fuel is required, there is a catastrophic shortage of resources, nature is on the verge of destruction. This is the punishment for neglect and, if you wish, the visible part of the iceberg of problems that have accumulated in science.

[Lagovskiy] Nikolay Pavlovich, do you consider the inattention to scientific and technical progress a mistake of perestroika?

[Laverov] This is rather not a mistake, but cruel fate. It seemed to many people that first it is necessary to understand politics and economics, while science will come in passing. For example, my speech at the last CPSU congress did not arouse particular enthusiasm. But I was trying to prove that miracles do not happen. It is impossible to advance on technology of yesterday. On the contrary, it merely increases the problems, builds in a lag, and squanders assets and resources. And that any party, which is in power and is beginning the fundamental restructuring of the economy, should first of all rely on a strong state science and technology policy. It is being seriously relied on in essence only now.

[Lagovskiy] "Strong" and "state"—these words, which are side by side, are perceived today with misgiving....

[Laverov] Perhaps, someone will recall the dictatorship, the domination of the center. But we have in mind an entirely different thing: the concentration of forces and assets on all-union directions of scientific and technical progress, which are equally important for all the republics. We mean to create favorable conditions for advancement. Information science, food production, medicine, power engineering, transportation—there should be no illusions that anyone can cope with these problems on his own. And here to warn at the right time: The political struggle is capable of leading to an absurd result. Science will be scattered among the republics, the scientific and technical potential will decrease even

more. And as a result everyone will suffer. Fortunately, the scientific community understands this perfectly well. It is in favor of the integration of efforts.

[Lagovskiy] But all-union programs were always a target for criticism. The main reproach: They are imposing on us technology, from which man is neither hot nor cold.

[Laverov] The criticism was justified. And it was taken into account. Instead of the former 250 programs 18 were adopted—for the most part they are aimed at social problems and economy. The most prominent scientists and the public took part in the selection of the programs. They took into account the experience of developed countries. In our country and abroad they acknowledge that the package is optimal and as a whole conforms to the tasks of the concentration of efforts on priority directions.

Twelve programs are directly oriented toward practice. They should help a number of the most important sectors of production to attain a qualitatively new technological level and "pull up" scientific research institutes, design bureaus, and enterprises to the present requirements.

Briefly about the content of the programs.

"Promising Information Technologies." Using new physical principles, it is planned to develop superhigh-performance computers, which perform up to 1 trillion operations per second. These computers together with large-capacity storage devices, systems of artificial intelligence, data transmission and processing devices, and mathematical models will create the technical base for the extensive informatization of society.

"Technologies, Machines, and Plants of the Future." These are hardware and complexes, which are oriented toward material- and power-saving technologies. Wherever they are used, a three- to tenfold increase of labor productivity is anticipated.

"Promising Materials." Equipment and machines of tomorrow will be made from them, which have unique properties.

"The Latest Methods of Bioengineering." Having studied physical chemical processes in living nature, scientists hope to develop yet unheard of technologies—from the extraction of metals and ores from dumps to the production of food products, plants, and animals with preset properties. Their assimilation in chemical production will reduce power expenditures to one-third to one-half.

"High-Speed Ecologically Clean Transport." It is a matter of new means of conveyance, which combine safety and comfort. The construction of the Center-South high-speed railway line and magnetically levitated trains is proposed.

"Ecologically Clean Power Engineering." One of the features is the extensive enlistment of nontraditional sources.

"Resource-Saving and Ecologically Clean Processes of Metallurgy and Chemistry." For the most part these are waste-free technologies, which will make it possible to restore the cleanness of atmospheric air and natural waters.

"Highly Efficient Food Production Processes." Here it is planned to develop fundamentally new techniques of increasing the fertility of soils, safe plant protection systems, unusual food products, and reliable methods of storing food products.

"The Combating of the Most Widespread Diseases." New drugs and treatment methods should by 2000 decrease by a fourth the level of the death rate in the country.

"Stroyprogress-2000." The goal of the program is to develop new construction materials and structures based on them. The shortening of the time of the investment cycle to one-half is anticipated.

"The Safety of the Population and National Economic Objects With Allowance Made for the Risk of the Occurrence of Natural and Technogenic Catastrophes." A set of studies and measures, which are aimed at protection against natural disasters and accidents, which are due to the interference of man, is envisaged.

"Promising Means of Telecommunications and Integrated Communications Systems." In accordance with this program information services will be expanded on the basis of digital communications networks and fiber optic data transmission systems. New satellites and mobile ground radio communications systems will appear.

Another six programs are aimed at basic research and should yield new knowledge about the surrounding world and the structure of matter. They are a kind of reserve for the further development of science and technology. These are **"High-Energy Physics," "High-Temperature Superconductivity,"** the **"Mars"** and **"Human Genome"** programs, **"Controlled Thermonuclear Fusion and Plasma Processes,"** and **"Global Changes of the Natural Environment and Climate."** The names of the programs speak for themselves.

So judge for yourself whether this research is needed or not. And let regional programs be left to the republics. They should also determine their own priorities and tactics. Under the conditions of the renewed federation it is assumed that the union republics will settle independently all questions of scientific and technical development with the exception of those that they voluntarily turn over to union organs of administration.

[Boxed item: Our Information: A council has been established for each all-union program. A prominent executive of the national economy and a leading scientist of the country in the corresponding field head it. The scientific council collectively supervises the research on projects. The projects are selected on a competitive

basis. In 1990 about 1,300 such projects were implemented, more than 15,000 participated in the competition.]

[Lagovskiy] Has it been possible to come to an understanding with the republics on the division of competence?

[Laverov] Let us say the following: These questions were agreed on and were included in the draft of the law on state science and technology policy. In addition to the formulation and implementation of all-union scientific and technical programs, the following should be left to the Union: the legal support of scientific and technical progress, the organization of the most important basic research, the development of a unified patent service and a system of product standardization, the establishment of an all-union scientific and technical information system, the elaboration and observance of unified demands on candidates for academic degrees and academic titles, and the coordination of international relations.

[Lagovskiy] And still let us return to the apprehensions. Where are the guarantees that in the future "fateful" decisions will not be made in secret? And the made decisions will be fulfilled?

[Laverov] We turned here to world experience and tried to establish structures similar to the ones that exist in developed countries. The underlying idea is as follows: There should be no monopolism in the management of such an intricate sphere as scientific and technical progress.

[Boxed item: Our Information: In the United States six experts evaluate every project by answering three questions: the scientific topicality of the project, the ability of the authors of the application to fulfill it, and the suitability of the institution, at which they work, for the fulfillment of the projects. In the bank of experts of the national science foundation there are 55,000 scientists.]

The highest state level of management, of course, is represented by the USSR Supreme Soviet and the President. In our opinion, it would be advisable to have under them a consultative council for science and education made up of 10-15 leading scientists. Scientists of principle, of different political views and specialties.

We propose to established under the Committee for Science and Technologies of the USSR Supreme Soviet a bureau for the evaluation of the priority directions of scientific and technical progress. Under the U.S. Congress there are even several such formations—some are in charge of domestic technologies, others are in charge of technologies that come from abroad. And "they" do not have to complain that, it turns out, one must not install produced or purchased equipment—it is harmful to the health.

The prime minister has a deputy who is in charge of science and technology. He has the All-Union Basic

Research Fund, the patent agency, and other organs. In addition, independent structures exist—the USSR Academy of Sciences, specialized academies, public organizations. They, in turn, set up “The Independent Public Examination of Projects and Programs.” In my opinion, this arrangement is capable of dispelling the apprehensions you mentioned. There will be both democratic management and fulfillment. There will be alternative points of view and the extensive enlistment of the public. Here is an example: There are petroleum and gas deposits in the Caspian Sea area, which are saturated with hydrogen sulfide. The task is to extract them and not to do much harm to nature. Previously they would have signed long ago a contract with some firm and would not have worried their heads with concerns for the consequences. Now we are studying the versions by means of new structures.

[Lagovskiy] Nikolay Pavlovich, you are deputy premier, chairman of the State Committee for Science and Technology, and vice president of the USSR Academy of Sciences. You will agree, in our times to combine so many positions is to deliberately place oneself under the fire of criticism.

[Laverov] I am not holding on to “portfolios.” This “package” of positions is a reasonable minimum, which blends with the emerging structures. The goals, after all, are entirely specific: to link basic science organizationally with the sectors that are engaged in the introduction of its achievements. The State Committee for Science and Technology lost long ago contact with the higher school, while with the resignation of Academician Marchuk the ties with the USSR Academy of Sciences were also severed. The state structures of management are cut off from basic science. If you wish, you can regard me as the same connecting link. Today personal contacts play not the last role.

[Lagovskiy] One should, of course, speak separately about basic science. For the present it has in our country the role of Cinderella. And, judging from the unabating “groans” of scientists, there are few prospects of becoming a princess.

[Laverov] There are not enough, of course, assets. And still I will cite several reassuring figures. In spite of the economic difficulties, the share of the total spending on science in the national income increased from 5 percent in 1986 to 7.1 percent in 1990. The allocations for the development of basic science through the state budget in the last five years have increased by nearly twofold. In 1991 they come to about 5 billion rubles [R]. While in all from the state budget we are spending on science and technology about R30 billion. The decree of the USSR government on the All-Union Basic Research Fund was adopted in execution of the Ukase of the President. Its basic assets are formed at the expense of the union budget. Nearly R3 billion have been allocated for 1991. A portion of the fund is in freely convertible currency. The scientific community itself will distribute the money, as is done in the United States, Germany, or

Japan. So-called commercial science—jobs performed by scientists under contracts with enterprises—represents another important block. In a year R40 billion of such research accumulate.

[Boxed item: Our Information: In the United States the departments of agriculture and health have the most powerful research centers with a basic emphasis. One of the largest sponsors of research in the Department of Defense.]

[Lagovskiy] For the majority of scientists the billions listed by you appear abstract and in the departments for the present do not affect the wage. Here rather another thing has an effect: our attitude toward knowledge and scientific work. It is a commonplace truth, but we poorly appreciate talent.

[Laverov] But did you know that this is a disease of not only our society? The prestige of the science worker has also declined in developed countries. And there they are seeking ways to halt the flight of scientists to commerce. More than one seminar has been conducted on this theme. We thought a while and proposed as an experiment the following solution. We introduced a contract system of remuneration at a number of institutes of the Academy of Sciences. For the first time in the history of the Soviet state a minimum wage is stipulated for the scientist, the maximum wage is established directly by the employer. In other words, at 16 institutes people will receive a completely different wage for different labor. It can differ by a factor of five to seven. And it is not necessary to submit such a decision for approval to any governing body.

But, alas, I cannot say that the experiment is going smoothly. Can you believe it, when they paid loafers and hard workers equally, no one was particularly outraged. But all one had to do was to give talented people incentives, and conflicts began.

[Lagovskiy] There are enough paradoxes in our scientific and technical progress. But if it were only a matter of them. The formed situation evokes another graphic comparison. We have loaded the car of problems, have put a steam engine in front, but have forgotten to lay the track. We do not have a single law that regulates interrelations in the scientific and technical sphere. How is one to make progress?

[Laverov] I honestly confess, this question is the most sore one. In the United States there are over 100 laws and in South Korea there are thousands of statutes, which concern scientific and technical spheres. They brought me from Japan a very fat volume printed on thin rice paper. There everything is noted down—from tax benefits to regulations of the enlistment of foreign scientists. We have nothing. But this does not mean that we neither tried nor are trying to lay the very same “track.” Having set off along the line of the Stockholm Convention, we drew up drafts of a series of laws. They concern the protection of the right of industrial property and scientific intellectual property, the copyright, science

and technology policy, the contract system, and many other problems. For example, patent law recognizes as the owner of an invention its author. This solves many problems. The right to scientific intellectual property is called upon to combat unscrupulous competition. I will cite one example, and you will immediately understand what it is a question of. They once organized in Japan a competition of computer programs. Our naive enthusiasts sent off about 1,500 capable works. In short, they all but made them a gift, use them. But, it turned out, it would be possible to sell this program product and to obtain millions of dollars. But to sell it provided that the right to it were stipulated in the law. The same kind of situation is forming with respect to approximately 20 items. We are losing because we simply do not value specific scientific intellectual property, moreover, we are squandering the program product, "know-how." Yet we could also not lose it, but acquire it—the West willingly agrees to cooperation first of all in the area of basic research.

A set of laws, which it is necessary to pass, has been submitted by the government to the USSR Supreme Soviet. And there their turn has come—consideration in the committees is now under way. There is the likelihood that they will be passed at the fall session. They say that there are more important laws. Perhaps, but any law, which is now passed, is worth billions. The legal support of scientific and technical progress does not require a kopeck....

[Boxed item: Our Information: Thus far the draft of the USSR Law "On Scientific Intellectual Property and the Strengthening of Its Protection," a package of draft laws that are connected with industrial property (on invention in the USSR, on industrial prototypes in the USSR, on trademarks and service marks in the USSR), and

drafts of the USSR Law "On State Science and Technology Policy," "On the Scientific Organization," and "On the Status of the Science Worker" have been drawn up.]

[Lagovskiy] Nikolay Pavlovich, how do you appraise the idea of RABOCHAYA TRIBUNA? We announced in a most primitive manner that we are arranging in the newspaper "The Idea Exchange." Appeal, we said, and we will publish it, we will help to sell an invention. We hope that small enterprises will also be set up for some developments.

[Laverov] You have a good idea, you are giving the inventor a chance. A "counterplan" of sorts has also matured here. We are thinking of establishing an agency for small enterprises and innovation firms. We are prepared to pay in the authorized capital stock. And to give support. Perhaps, those who turn to your "exchange" will also need it. While we can make experts available for the evaluation of ideas.

[Lagovskiy] Thank you, we accept your offers. They say that considerable wealth also lies on your "shelf"—inventions that have not been implemented or have been rejected. Why not sell them to the West for currency?

[Laverov] We tried to, they do not take them. And mainly due to the fact that the inventions have not been registered by patents.

[Lagovskiy] Of course, in one interview one cannot raise all the problems of science. And one cannot encompass all the plans. And therefore by way of closing, with what can you as chairman of the USSR State Committee for Science and Technology give the inventor pleasure? After all, for many your department is the last hope. Those already turned down by everyone come to you.

[Laverov] At our own risk we allotted from the reserve R10 million and established the Fund of the Inventor. It is a small fund, but it is possible by means of it to save several talented people and to support useful works.

Osipyan on Social Factors of 'Brain Drain'

917A0164A Minsk ZNAMYA YUNOSTI in Russian
5 Apr 91 p 1

[Interview with Vice President of the USSR Academy of Sciences Yuriy Osipyan by IZVESTIYA AKADEMII NAUK commentator Svetlana Soldatenkova under the rubric "A Topical Interview"; date and place not given: "I Am Certain They Will Also Come to Us"—first paragraph is ZNAMYA YUNOSTI introduction]

[Text] According to the predictions of specialists, after the passage of the law on free departure, a significant number of scientists will leave our country. An IZVESTIYA AKADEMII NAUK commentator talks with Vice President of the USSR Academy of Sciences Yuriy Osipyan about several aspects of this problem.

[Soldatenkova] How do they appraise at the Academy of Sciences the situation with the possible departure abroad of a large number of Soviet specialists?

[Osipyan] We were faced with the problem several years ago. It has its own objective causes. And one of them is the poor social conditions of life in the USSR.

Scientists constitute that category of people in society, which, having extensive foreign contacts, has a good idea of the difference in living and working conditions in our country and outside it. The wage of foreign scientists is fivefold, tenfold greater than that of their Soviet colleagues. For example, the highest rating—the director of an academic institute, a full member of the academy of sciences, a most prominent scientist in his prime, to whom hundreds and, at times, several thousand people are subordinate—receives an academic stipend of 500 rubles [R] and a wage of R1,000, or about R18,000 a year. At the commercial exchange rate this is approximately \$1,000 a year. A specialist of such a level in the United States earns more than \$100,000 a year.

Or another example: my son. He is 30 years old, a candidate of sciences, and married, has two daughters, and earns R350 a month, this is R4,200 a year. In the West such a specialist earns \$30,000-35,000. To this one should add the runaway inflation and acute shortage of goods in our country, the social and ethnic problems. For example, Jewish emigration is connected to a certain degree with the continuing everyday anti-Semitism. The interethnic discords in each specific region are also greatly complicating life. All these social factors, undoubtedly, are prompting scientists to go abroad.

This problem has another important aspect—the creative aspect, the conditions for scientific activity in our country are significantly inferior to foreign conditions. In absolute amount the allocations for scientific work in the USSR are substantially less than in the largest western countries. The entire small amount for the development of science, which is received from the state, is distributed in small portions among a large number of scientific organizations. As a result thinking, talented

people finds themselves under conditions, when opportunities for efficient work have been taken from them. Often it is possible to heard among scientists the following conversation: Now I did one job in three years. My student, who went to the United States, in this time did four. But he has, after all, both less knowledge and less experience than I do." Here Soviet scientists are well-informed of the fact that in the United States their colleagues have advanced equipment and scientific service, while everything needed for an experiment appears in the laboratory on first request in three days at most. These factors for scientific personnel are very important and often influence the decision to go aboard or to stay at home.

[Soldatenkova] Of the Soviet scientists, who left earlier, are there prominent specialists?

[Osipyan] Unfortunately, there are. But I would like to point out that one should not treat the factor of the departure of a person somewhere for a job abroad as a misfortune that cannot be put right. Scientific work is an international affair. I do not have in mind here special questions, which pertain more not to science, but, for example, to technical use, that is, the secrets of a firm, state secrets, and military secrets. In this case I am talking about purely open scientific knowledge. If this knowledge has been obtained in the USSR, it becomes the property of the entire world. If it has been obtained in another country, it also becomes common property. Therefore, if a scientist has gone to another country and conducts research work there, he should not sever ties with his own country, with his own city, with his institute, laboratory, and comrades. I want to believe that many Soviet figures of science, who have gone abroad, will one day return. The history of the first and second Russian emigrations, when a large number of people, who not of their own will found themselves abroad, subsequently returned to the homeland. I want to stress once more: One must not regard the people who left as lost for Soviet science. Moreover, I hope, the times, when at the same time as the departure of Soviet specialists foreign scientists will come to the USSR, will begin. Already now, for example, tens of people from abroad are asking to be taken on at the Institute of Solid State Physics for work for a year or more. But here social factors are playing their negative role. Unable to guarantee them a normal, according to their standards, life, the Soviet side has been forced to reject the requests, although the opportunities for scientific work at several institutes are good. As soon as living conditions in the USSR change for the better, I am certain they will also come to us, and then two-way traffic will begin. And although this flow will not be the same in both directions, this traffic will become a very important factor, which will alleviate the negative consequences of the process of the departure of specialists from the country.

[Soldatenkova] Will all of those, who leave, be able to find work abroad?

[Osipyan] One should not think that a wide choice of places of work will appear before every candidate or doctor of sciences, who leaves the USSR. Rather, it is the other way round. After all, for Americans themselves, just as Europeans, it is a problem to find permanent creative work, guaranteed employment until the end of their life or until retirement. Years are spent on this. And what is one to say about newcomers! Moreover, Soviet people have become accustomed to social protection, even though it is not so absolute, as a consequence of which everyone in his heart is confident that the state or society is obliged to give him work. This is, so to speak, the costs of "socialism." But in the United States, if a person has not found work, he blames only himself. The Soviet emigrant, having gotten into such a situation, is forced to scurry and seek work for himself, which earlier he never did. And here such factors as not knowing the language and the special nature of training, which differs significantly from western training, begin to have an effect....

It is no secret for anyone that in western society the businessman is a hero. A talented enterprising person, who is self-confident, engages in business with pleasure, this brings him moral satisfaction, respect in society, much money, and tempting opportunities. In the USSR on the threshold of the market economy such people are also appearing. However, domestic businessmen thus far do not have social respect, such as in the West. Soviet people bestow upon them not always complimentary epithets, because our social morals are based on different principles: If a person is poor, thus, he is upright and good, if a person is rich, he is either a swindler, a thief, or a machinator and an exploiter without fail. Unfortunately, such morals have their roots in remote history, and no one is capable of changing them in a moment. Hence the redoubled attention to such prestigious spheres as science and art, although not everyone with respect to his mentality and talents is suited for them, and as a result Soviet emigrants, who in reality did not have an outstanding aptitude for the pursuit of basic science, but who in their own homeland aspired to this, remain out of work. Many of them are changing their occupation to businessmen. It is hardly worth considering this a failure of life. Rather, a person is finding his place in life.

Malyshev on Halting 'Brain Drain'

917A0158A Moscow POISK in Russian No 13 (99),
22-28 Mar 91 p 3

[Interview with Deputy Chairman of the RSFSR Council of Ministers Nikolay Malyshev by Yelizaveta Ponarina under the rubric "Point of View"; date and place not given: "For Whom Does the Bell Toll?"—first three paragraphs are POISK introduction]

[Text] Ask today the first person you come across: "Do you care about the 'brain drain'?" and you may run into a puzzled look: "In the country they will jack up precisely prices, it is unclear what will happen with the

Union, there are lines—even for matches sold by weight. But you are talking about what?"

But I am talking about the "brain drain." About the problems of the intelligentsia. Because this problem frightens me not only by the fact that I am taking the risk of losing my own circle of contacts, but also by the sense that we are all taking the risk of losing the future. For both leading lights and the young shoots of science are leaving. Who, tell me, in a year or two will then teach our children at higher educational institutions?

Understanding that this question may become rhetorical, if the same alarm does not gnaw today the people who are responsible for the fate of science in our country, I asked Deputy Chairman of the RSFSR Council of Ministers Nikolay Malyshev to reflect a little on what, in his opinion, it is possible to oppose promptly to the "brain drain" and whether it is conceivable to halt this process in a drastic way?

[Malyshev] Of course, it is conceivable, he declared without a shadow of doubt. One has only to take and **not pass** the Law on Entry and Departure. Or to pass it, but not to exchange rubles for currency. It is also possible, having passed the law and while exchanging money, not to develop lines of transportation: Border stations then will be transformed in a jiffy into an eye of a needle, through which the camel of emigration will not go. The only trouble is that all these wiles will not save us, but will merely aggravate the situation. In captivity it is possible to pull stones, it is possible to graze livestock, but you do not succeed in writing computer languages. Here without freedom of the mind there is nothing that one can do.

[Ponarina] You, it seems to me, are exaggerating. In the history of our country, I remember, there were very productive "small worlds" of scientists. But what was the ground there for success? Fear mixed with patriotism and supplementary food....

[Malyshev] If these people had created in freedom! How much progress they would have made! Fear suffocates people, it does not develop them.

[Ponarina] But precisely fear is provoking today a surge of emigration. The fear of blood is driving the intelligentsia away from the country. How many people rushed to foreign embassies no sooner than hatred of dissidence began to seethe from high rostrums. And especially when bullets began to whistle in Riga and Vilnius.... While losing hope of the establishment of a rule of law state, people are afraid of a return to the old.

[Malyshev] It is easier to be afraid than to oppose barbarity. To oppose it competently and persistently, while realizing that victory will not come soon. King Solomon for 40 years led his people through the desert and waited until the last slave had died, until everyone's psychology had changed....

[Ponarina] No, we cannot hold out another 40 years, even children lack patience. Does it turn out that the only way to the light at the end of the tunnel, to escape from the servile state is departure?

[Malyshev] I do not think so. But I also do not allow myself to delude myself that I will see this light tomorrow. Otherwise you will lose heart out of despair. There are objective laws of the development of society. The first time Khrushchev took the risk of altering our way of life—and did away with the Gulag. That is, our economy, which was based on the Gulag. But he did not dare and did not have time to go farther—the system overthrew him.

The second time Gorbachev staked everything. And the socialist camp, having been deprived of an overseer, immediately fell to pieces. The economy also did not get this for nothing: For immediately after it is necessary to reduce the spending on the military-industrial complex. It is no longer needed as such a powerful one. But the military-industrial complex, like the Gulag earlier, ran through our entire economy like a backbone—try to pull it out! Too many people, from the skilled machine tool operator to the chief marshal, depend on its well-being and strength. One will not succeed in casting aside their interests all at once. And no appeals for democracy and conscience will help here. Time is needed in order to change the situation.

[Ponarina] Are you proposing to think again about the well-being of the military-industrial complex? It knows how to stand up for itself. But who will protect science? During days of social upheavals it, culture, and art the first to suffer. If not as a result of murders—when they direct aimed fire at television operators, then as a result of negligence—when they quietly push beyond the cordon entire orchestras, laboratories, brigades of physicians. People do not want to live that way.

[Malyshev] And they are acting correctly. Incidentally, for a long time basic science was sustained from the military-industrial complex, at least physics in our country flourish to a significant degree on money "from the bomb." Now the allocations have been reduced, and science of the military-industrial complex is also suffering. What is to be done? To create for all scientists conditions of existence, which are normal according to world standards and special according to our standards, so that they could work.

[Ponarina] It seems that we have returned again according to our own circuit—will we establish reservations like the "small worlds," only call them "free scientific zones"?

[Malyshev] Scientific zones are not closed scientific towns, which to this day have not been eliminated in the Urals and Siberia. I am talking about different conditions. And first of all about freedom. I can no longer imagine things without it. Previously the scientist was

still able to endure much, but now, when he has chanced to see how the world lives, melancholy has sunk into his heart....

[Ponarina] Melancholy? Perhaps, it is malice, which is similar to envy: How, I say, am I worse?

[Malyshev] Perhaps envy as well. Only not envy of another person's plate, of another person's mansion, but of the opportunity to realize oneself as a scientist. Yes, our scientists have a hard time abroad. The West is already resisting the emigrant invasion. For the present, it is true, they are hiring scientists, but also not on enviable terms: They pay them half of what they pay their own scientists. But they are taking them, for emigrants saturate science with fresh ideas, rouse people with hungry enthusiasm, and stimulate healthy competition. This gives science a powerful push in development. But what does it give us? It is dealing a severe blow to the economy.

The training of one specialist costs about \$100,000 (roughly 1 million rubles). If 1,000 specialists leave, calculate, they have excluded 1 billion from the treasury. But there is also the missed advantage. For all our disasters, up to the Chernobyl disaster, have been due to incompetence. So do not ask: "For whom does the bell toll?"—everyone in our country, even the person who does not want to know about the concerns of the intelligentsia, will suffer from the "brain drain."

Now a fear of science has broken out. While the status of the scientist is simply humiliating. He is deprived in our country of the opportunity to live by his abilities and competence and is forced to exist on the assets that they allot him as a wage. This is not the fault of the intelligentsia, this is its misfortune. A prominent scientist could earn without problems a worthy living for himself and his family, provided the results of his labor were his property and he could sell them to those who need them more.

The Law on Intellectual Property is of vital necessity to us. This is one thing.

The second is that it is necessary at the state level to achieve the provision of guarantees of the freedom of contact of scientists. That is, the accessibility of all types of world information and the easy of movement, so that a scientist could meet any day foreign colleagues, go to Italy for a seminar, and invite people to his own country. Of course, here currency is needed, but it is necessary to let scientists themselves earn it for themselves.

That is, it is necessary to allow contracts in a specialty to be concluded freely with foreign firms without restrictions in the remuneration of labor and with preferential taxation. It is necessary to retain for scientists when they work under contract abroad USSR citizenship and to permit the free keeping of the earned currency both in foreign banks and in our country in accounts of the USSR Bank for Foreign Economic Relations. I assure

you, very much will soon be returned to our science from these personal assets and, what is the main thing, will save us minds.

For the present everything is being done exactly the other way round: This year even the USSR Academy of Sciences did not have enough currency assets to subscribe to all the necessary literature. What is to be done? To spend far more—and to establish computer information networks, by means of which to hook up to databases of the world. This will probably lessen the information famine and, perhaps, keep some people from packing their bags. However, this is a very complicated matter. For the present a contract with Bell Telephone on the organization of an enterprise for the production of the necessary equipment for the formation of such networks between VUZ-academic science of Moscow and Leningrad is at the discussion stage. This is just the first step, of course. But let us begin!

However, the problem is that each such project requires for implementation tens of millions of dollars. You will not get that much from the treasury. Here is what we are thinking—perhaps we should establish a level of percentage deductions from the currency payments for exported raw materials and products for the holding in Russia of international symposiums and conferences and for the establishment at first of if only four or five teleports of international telecommunications service within the international scientific network. For example, in Novosibirsk, Krasnoyarsk, Rostov, and Sverdlovsk. This will expand the possibilities of the contact of scientists and will lessen somewhat the longing to go abroad.

But later I would agree to extreme steps, which are very popular among the people: I would go and name by name the entire intellectual elite of Russia—technical and cultural. And would give each one guarantees of social protection. What ones? It is possible by state act to make a gift of land. Of course, only to whoever is of value to Russia—well, such people as singer Khvorostovskiy, musician Yuriy Bashmet, transplant surgeon Ernest Muldashev from Ufa, and others. To give not estates, but if only a bit of land, on which it is also necessary to help build a house. Let the scientist then go abroad, but from everywhere it will pull him here. He will remember that in the homeland there is his land, because they value him very much there.

Incidentally, abroad they make to such great musicians, physicians, and researchers gifts of land, a house, cars.... They consider this profitable. It is probably not for nothing that the president of the Syrian Arab Republic presented to Svyatoslav Fedorov half a hectare of coastline on the Mediterranean Sea. They value intelligence. While we cry over "brains" only when we lose them....

No, it is necessary to seek without delay means to "tie" our scientists to our country. Perhaps, even by special conditions for the organization of their own business—for example, tax benefits.

Of course, for the present such ideas evoke a negative reaction. And so it will be until the situation changes. But it is necessary at last to understand: To grudge money for science means to doom oneself to uncontrollable spending, buying up abroad everything in succession: from a facsimile machine to drugs. In the end, having been left without minds, the same people will very soon feel like a headless horseman. In my opinion, this is frightening.

[Ponarina] Do you really believe that a some time in Russia they will again value people "in glasses and hats"?

[Malyshev] I do. This will only happen when people are really frightened that there is no one to repair either an iron or a refrigerator. I, of course, am exaggerating. But it is time, indeed, for us to be frightened. No entreaties, no appeals will help perestroika without an intellectual elite. The devastation, as Filipp Filippovich Preobrazhenskiy, the well-known hero of Bulgakov's prose, said, is not in the street, the devastation is in heads. The longing for totalitarianism is also there, I will add. We simply will not bid farewell to it.

Psychologists have a rule: If the worst threatens to happen, think out now how you will go on living. In the same way a military coup, even if it, unfortunately, took place, would not rid the majority of us of the need to go on living, relying on science. The most a coup would do would be to change the government. Some people are waiting for this, some people are afraid of it. But a coup will not ensure either the satiety of people or well-being. Only scientific and technical progress gives people both.

In the United States now only 20 percent of the population produce physical assets, that is, act as workers, 3-5 percent are engaged in farming and feed the country, while 40 percent render scientific and information services.

But tell me, can the American farmer exist today without a computer? For him it is an accountant, a forecast bureau, a state committee for material and technical supply, a consultation center on selection.... While soon, apparently, not more than 10 percent of the workers will remain.

Is it difficult and expensive to take this path? Initially, yes. But one must not be stingy when it is a matter of saving the mind of the country. Otherwise later one will have to invest far more—after all, it is correctly said: "The miser pays twice"....

Independence of Academy of Sciences, RSFSR Raises Property Ownership Issues

917A0154A Moscow POISK in Russian No 11 (97),
8-14 Mar 91 p 3

[Article by Vladimir Shlemin (Pushchino): "Municipalization, or the Repetition of Covered Ground"—first eight paragraphs are POISK introduction]

[Text] "We, the house management," Shvonder spoke with hatred, "have come to you (Professor Preobrazhenskiy) after a general meeting of the tenants of our house, at which the question of the consolidation of the apartments of the house arose...."

"...Did you know that by degree...my apartment is exempt from any consolidations and transfers whatsoever?"

"We do," Shvonder answered, "but the general meeting...came to the conclusion that in general and as a whole you occupy excessive space."

M. Bulgakov, *Sobachye serdtse* [Heart of a Dog]

"I am pursuing the policy of the majority of the soviet. We are acting within the legislation. The parliament of Russia suspended the effect of the ukase of the President in the area of the property of the Academy of Sciences and resolved that all objects, which work for the people, are disputed property. Thus, we can municipalize it."

V. Dynnik

"By the Ukase of the USSR President the Academy of Sciences was declared the owner of the property belonging to it. In spite of this, the Pushchino Scientific Center has already lost fixed capital work 4 million rubles [R]."

Ye. Golovlev

...And in the 73d post-October year the soviets took power in the city of Pushchino. First of all, of course, they promulgated "decrees": on land and property. More simply speaking, they published the theses "On the Economic Basis of Local Self-Government," in which they outlined:

"1. To go to the Serpukhovskiy Rayon Soviet of People's Deputies with a proposal on the repeal of the Act on the Right of Use of the Land of the USSR Academy of Sciences....

"...

"3. To send to the USSR Academy of Sciences a statement on the transfer to the jurisdiction of the Pushchino City Soviet of People's Deputies of all objects that are grouped with municipal property."

Everything is returning again according to its circuit. The question of power is arising again, the dispute about rights is developing again, property is again being alienated ostensibly for the good of the deprived and indigent.... But in Pushchino this process today has assumed, it must be said, the most distinct, visible forms.

The point is that the city is grouped with so-called monofunctional cities. That is, its entire essence is subordinate to one thing—the activity of the Pushchino Scientific Center of the USSR Academy of Sciences. Formed a little less than 30 years ago, the Pushchino Scientific Center built and continues now to build

housing for scientists and their families, stores, dining rooms, cafes, restaurants, schools, kindergartens, and a hospital with a polyclinic. However, the board of directors of the center, which consists of scientists, in the management of municipal services acted, unfortunately, in the same way as in its own family way of life: If they got hold of some money, they bought with it the same science-intensive good, while forgetting about the needs of ordinary life. First, they say, I will acquire a microscope, and then boots: The sole is still holding out. But the city dwellers refuse to tolerate what they somehow tolerate in the family. People have grown tired of squalid housing, the lack of a stadium, good for nothing transportation and telephone service to the center.... Of course, when perestroyka began, the new soviets found themselves in power. But here the Law on Self-Government also arrived in time. The soviets in actual reality remained powerless. You will agree, it is reminiscent of the reader situation of "dual power." For however funds of different levels in the cities of our homeland are socialized today, they all have their own, even though nominal, owner. So it is in Pushchino as well.

By the Ukase of the USSR President there was transferred to the ownership of the USSR Academy of Sciences all the real and personal property, which it used with the rights of joint owner of the state. In turn, the presidium of the Academy of Sciences delegated a portion of its rights to the presidium of the Pushchino Scientific Center, which in Pushchino also became the authorized representative of the Academy of Sciences. That is, the Pushchino Scientific Center now owns everything in the city, including the land, the mass media—even small-scale media, communications, housing, trade, culture, transportation, and so on.

"The city authorities are not managing even the cemetery," Vladimir Dynnik, chairman of the Pushchino Soviet of People's Deputies, sums up. "The budget is negligible. We are running it with a deficit of tens, hundreds of thousands. If we do not find money, all projects will also remain them."

The soviets need money. In order to prove their necessity to the city. In order to compensate the needy, according to campaign promises, for the increase of the cost of living, to intensify the construction of housing, and to make, finally, the stadium. But for it alone, according to the words of Dynnik, about R2 million are needed. Moreover, time does not wait: For the board of directors of the Pushchino Scientific Center is already prepared to establish its own fund of assistance to the needy and retirees! This is a part of its program of the development of Pushchino. Here the city soviet is also hurrying to replenish its budget more quickly. For this, for example, it is registering on its territory various kinds of commercial structures with the aim of future deductions. But these financial injections at best will appear in the future. Traditional sources—taxes from the profit of enterprises—are practically absent here. Here there are only three enterprises that are not carried on the state budget. The volumes of their financial operations are

modest. As a result the soviet reminds one more and more of the king from Exupery's tale "Little Prince," who did not have subjects. But if you have nothing, it is possible, in accordance with historical analogies, to take. From whom? From the very same person—the owner. But in the city he is a single one—the USSR Academy of Sciences in the person of the Pushchino Scientific Center.

"We are not opposed to transferring housing and other objects to the soviet," says Director of the Pushchino Scientific Center Golovlev. "Pushchino with every day is less and less a purely academic town. People are leaving for another job, are moving away, are changing apartments. The second generation of city residents at times is not connected in any way at all with science. It is to the academy's disadvantage to support, pardon the awkward turn of speech, 'strangers'...."

"Housing, in my opinion, should not be taken," Chairman of the Soviet Dymnik is certain, "this is only losses. In Protvino the local soviet took this burden upon itself. And together with it tens of millions of rubles of expenses. No one is helping it to cover the deficit."

The Pushchino Soviet is acting more prudently. Of all the municipal property it is selecting for itself that which either yields direct income or provides its owner with a service advantage: for example, the repair services of the city.

"But for what do you need land?"

"We will collect rent for its use in accordance with the cadaster," Dymnik explains.

"Do budget-carried organizations have this?"

"Why not? If the state does not directly provide subsidies, let it transfer them as a fee for its organizations."

In addition to land the hotel of the scientific center was municipalized. In February the executive committee announced the establishment on its basis of a municipal enterprise.

"The hotel is a gold mine," Kornilov, deputy chairman of the presidium of the Pushchino Scientific Center, explains. "It was built for the accommodation of participants in international congresses and seminars. The soviets intend to collect currency from our guests. Moreover, Polenovo and Chekhovo are nearby, Yasnaya Polyana is not far away. For foreign and Soviet tourists it is open spaces. And what about the Simferopol-Moscow Highway?! Fruit dealers will not find a better spot for transshipment. True, then no places will remain for scientists. But then the soviet will get, as it believes, real money."

This is how the soviet, supposedly without exceeding its political rights, is establishing its own economic base from the property of others and here is expatiating on the means of improving municipal services. In accordance with a scientifically analyzed program.

Which one? The one pretentiously entitled: "The BETAPOLIS Project." In it, true, there is nothing new and fundamental. The assets of institutes of the Biological Center and ecological improvement by the implementation of a special scientific program of the center are relied on, the advantageousness of the establishment of a technology park—this symbiosis of science and technology—is declared. It is all correct, but what do the soviets have to do with it? A year ago the leadership of the Pushchino Scientific Center proposed all this and even began to implement it. Its concept of the development of Pushchino, not counting the amusing plan of the establishment in the city of a furniture factory, which is oriented toward the sale of products to countries of the Near East, and a construction combine, which is capable of offering residents, who are languishing in the lines for apartments, cottages for several hundred thousand rubles each, in principle, repeats the developments of Ye. Golovlev and his team, who are associates of the Pushchino Scientific Center.

Incidentally, this does not disturb V. Dymnik. He even finds a philosophical explanation for what is happening, entirely in the spirit of historical traditions, declaring that the Academy of Sciences is an organization carried on the state budget, which subsists on the money of taxpayers, and, thus, each of the residents of Pushchino has the right to decide how to treat the property that was acquired, so to speak, with his assets. We—the soviet—represent precisely the population of the city.

It is elegant, is it not? The logic is simple, like a drink of water: Since we live in an academic town, thus, we have the right to decide what to do with it. Since property in our country is public, and we—the residents—are the people, thus, the hotel is ours, the repair and construction administration is ours.... In general, everything around is ours. Here it is completely forgotten that no group of people's deputies, except the Supreme Soviet of the country, has the right to dispose of property that belongs equally to all the people.

Every ruble of capital of Pushchino in case of division, for which the representatives of the city soviet are striving, should be distributed not among the 20,000 representatives of Pushchino, but among the nearly 300 million people who make up the population of the country! Is it possible to calculate into what deprivations every ruble, which was channeled into the development of science in Pushchino, turned in the social sphere of Central Asia, the center of Russia, and the Far East? It is impossible! Incidentally, it is also impossible to calculate the profit that has been given by science of Pushchino to different regions of the country. And that is why the group alienation of property without proper compensation is just as unacceptable as the aspiration of Shvonder to take from Professor Preobrazhenskiy the "excessive" living space.

Incidentally, have you pondered why these characters of Bulgakov evoke such obvious dislike? In my opinion, the

point is that we have finally realized: The socialization of property on a world scale leads to economic dislocation.

We once took this path, when, using the interests of society as a cover, we took property from the most assiduous owners, but then squandered what had been taken. When the division was over and there was nothing to take from anyone, we gave power to the apparatus. It contrived to go farther—to take from society also the right to use what had been socialized. Only with the

permission of the apparatus, which, having come to power, grew stronger and expanded.

“Yes, the apparatus of the soviet has increased somewhat,” V. Dynnik says, “there were only 32 workers, they grew to 46. But we cannot manage without them.”

Is history repeating itself? Is it not time to learn lessons from it?

RSFSR Academy of Sciences Disputes Over Appointments

917A0166B Moscow ROSSIYSKAYA GAZETA
in Russian 10 Jul 91 p 4

[Article: "The Scientific Urals Protests"—first paragraph is ROSSIYSKAYA GAZETA introduction]

[Text] At a meeting of the working committee for the promotion of the formation of the Russian Academy of Sciences, which was elected by the congress of scientists of the Urals in April of this year, an appeal to the RSFSR Supreme Soviet, the RSFSR Council of Ministers, and the organizing committee for the formation of the initial composition of the RAN [Russian Academy of Sciences] was adopted.

In the Basic Principles that were approved by the organizing committee, it is stated in the appeal, the decisions of the Leningrad congress of scientists of Russia and the mentioned Sverdlovsk congress and many other initiatives of the scientific community at large are actually crossed out completely. The Basic Principles, in the opinion of the people of the Urals, are conservative, are permeated with the spirit of secrecy, and predetermine the formation of the initial composition of the RAN as a "subsidiary" of the USSR Academy of Sciences, which inherits its most serious shortcomings. Without correction of the document, the authors of the appeal declare, the election to the RAN will inevitably have the nature of "personnel games," while it will itself turn out to be stillborn and useless for the matter of the revival of Russia, the upswing of domestic science, and the increase of the prestige of scientists themselves. In the interests of the matter the authors demand the revision of the adopted procedure.

Communists Struggle for Power in Latvian S&T Institutes

917A0167A Riga SOVETSKAYA LATVIYA in Russian
15 Jun 91 pp 1, 2

[Article by I. Kharlanova (Press Center of the Central Committee of the Communist Party of Latvia): "Who Will Defend the Scientist? Notes From the Meeting of Communists of the Latvian Academy of Sciences"]

[Text] 1. The Syndrome of Destruction

V. Eglit, a staunch communist and professional scientist, who was faced, like many of his colleagues at the Latvian Academy of Sciences, with the choice: "Either you turn over your party membership card and for the time being they will let us to engage in your favorite work, or...." preferred the latter. True, he had not been unemployed a long time. The communists of Moskovskiy Rayon in Riga appreciated the action of Voldemar Voldemarovich, having elected him second secretary of the rayon party committee.

This fact was cited at the last meeting of communists of the academy, at which the tasks in connection with the

new trends in the development of basic and applied research in the republic were discussed. In the report, which Yu. Sokolov, chairman of the council of secretaries of the party organizations of the academy, delivered, it was emphasized that science, as a part of the whole, serves as a vivid illustration of what is happening in Latvian society with the coming to power of new political leaders. Destructive processes are characteristic to a greater extent of science in the republic, just as of other spheres. And this cannot leave the communists of the academy at ease, for, as is known, science is a part of the public property of the people.

The speaker used the incident with V. Eglit, in particular, to substantiate the thesis that the use of science today as a hostage in political games by certain forces, which are fulfilling the social order of official circles, serves by no means the increase of its creative potential. In the first place, everything was done in order to suppress in the social sciences any scientific direction, any scientific idea that runs counter to the ideology of the People's Front of Latvia and the right radical majority in the Supreme Soviet of Latvia, having thus made way for unbridled anticommunism, the speaking ill of all our longstanding history, the preaching of the charms of the capitalist way of life, nationalism....

In political biases one should also seek an explanation of the large-scale "purge" of dissidents—communist scientists—that is being carried out at the academy. From the report we learn that last year the Union of Scientists of Latvia and a number of organizations, which are close to it in spirit and political slant, took advantage of the paralysis of the constructive forces of the academy, which was due to the crisis as a whole in the Communist Party of Latvia. They were able to form the council for science and expert councils, which they need and are capable of making the necessary decisions. Even though the theme of a development, which is proposed by a scientist who professes different political views, is useful over and over again for society, you will not get the "go-ahead" of experts for its financing. So be content with the fate of an unemployed person or change your convictions to a different color. Of course, far from everyone proved to be capable of passing such a test, on which the organizers of this action had also counted. Therefore, the party organization of the academy soon found missing many of its comrades.

From the rostrum of the meeting Academician V. Shteynberg told about the use of another, no less classic method of "witch hunting." The new leaders from the People's Front of Latvia changed one word in the name of the Institute of State and Law, which is a part of the structure of the academy. But they legalized this by the act of the elimination of the institution entirely, having created on its basis a supposedly completely different one. Accordingly the former collective was also dissolved by order and in its place a new one was assembled. It is impossible to object to this: Such an action is within the existing legal norms. Only it proved to be camouflage of an exclusively political character. Everyone both worked

and remained to work—with the exception of...members of the Communist Party of Latvia.

Whoever expected in this way to undermine the positions of Latvian communists, it was noted at the meeting, utterly miscalculated. Many of the dismissed scientists followed in the footsteps of V. Eglit, having devoted themselves entirely to the struggle for the ideas of the Communist Party of Latvia, which urgently needs intellectual support. Thus, Doctor of Juridical Sciences V. Miller, former director of an institute, is now devoting significantly more time to his duties as a member of the Central Committee of the Communist Party of Latvia. The knowledge of K. Matveyev, whose actually threatened unemployment coincided with his election to the Supreme Soviet of Latvia, proved as useful as possible to the "Equality" Faction, which was experiencing a shortage of skilled lawyers.... But did real science, which is called upon, in particular, to serve the objective cognition of social processes, and not the ambitious intentions of specific political groups, gain from this?

The meeting participants asked themselves a similar question when talking about the fact that separatism, which had not passed over the academy and had blossomed luxuriantly in society, is also doing irreparable harm to republic science. The same expert councils are striving incessantly to reduce the assets for promising directions of scientific thought, if they have primarily an outlet to the solution of statewide and all-union problems. Attempts of this sort to divide scientific space into individual isolated areas led to the sharp curtailment of longstanding fruitful cooperation with many partners outside the republic, while for many scientists, who had worked more than a year on this theme, unemployment actually began to loom ahead.

But they received the 18 million rubles, which had been allocated by the USSR Academy of Sciences, moreover, without any preconditions whatsoever: In the "center" they value the potential of Latvian scientists, which has turned into many significant developments of a union and international scale. The main library, the atomic reactor, the Zinatne Publishing House, and the themes of many institutes are already being partially financed from these assets. This traditional support, perhaps, will be the last, it was stressed at the meeting, now that the well-known "agreement of nine," which denies most favored nation treatment on the part of Moscow, if the new Union Treaty is not concluded, has been signed.

How often we now have occasion to observe that elementary nonprofessionalism, which borders at times on adventurism, is the best ally of separatists of all ranks. At the meeting of communists of the academy I managed to find out new evidence of what consequences the devotion to these qualities, which are not of the best character, of the people, who today are at the helm of power, will turn into for science. While all the leading countries, to which the present ideologists of the People's Front of Latvia so like to allude, are increasing the investments in

science for the needs of industry, the republic government this year for the first time in all of postwar history regarded the giving of any assistance whatsoever to industry as inexpedient. Having, as is evident, completely forgotten that precisely industry can meet the needs of the market and, thus, can ensure recovery from the crisis as a whole. Meanwhile, enterprises themselves, experiencing great difficulties, do not have the assets to finance science.

The destructive force of the political and financial measures, which are being implemented by the powers that be with respect to science, also appeared with obviousness in other facts that were heard at the meeting. For example, how else is it possible to explain that the total special-purpose financing within union programs and agreements will decrease this year to one-half to two-thirds, and this is given the sharp increase of the prices of materials, raw materials, and services? That the assets allocated from the budget of the republic are being pumped again into the budget as the social tax, which comes at times to 70 percent? That compensation in connection with the price reform has been placed on the shoulders of scientists themselves? Incidentally, the "architects" of destruction are not concealing their intentions?

The facts made public at the meeting about the moral ways of those, who hold in their hands the financial levers of the management of science in the republic, pointed at the next sad analogy, which arose from the comparison of the processes that are occurring in society as a whole and in science in particular. While in parliament the servants of the people from the People's Front of Latvia by various machinations are improving their housing conditions, are sharing Volgas, and are riding in entire families about foreign countries, it turns out that their brothers in spirit, who are taking the cream off science, are also on the alert.

It is a matter of the same idle experts. They took advantage of the fact that during the election the expert councils were formed according to the principle of scientific and political likings, and a number of scientific directions proved to be represented in an obvious preponderance. And immediately the principle "whoever succeeded, ate..." began working. Some fields began to be declared promising, others, for which there is no one to stand up in the council, even if they are very necessary for the acquisition by the republic of the same sovereignty, for the sake of which the pseudodemocrats are supposedly willing to agree to everything, were deprived of financial support.

As a result of such "enterprise" it may happen that next year several directions of physical, analytical, and inorganic chemistry will cease their development. These are precisely the directions that are engaged in research in the area of the protection of metals against corrosion, electrochemistry, the removal of toxic chemical substances from natural waters and sewage—research,

without which it is impossible to combat the raw material and energy shortage that is predicted under the conditions of independence.

2. Only a Dead Fish Swims With the Current....

We will not be forgiven by posterity, if we are unable to resist the further wrecking and destruction of the scientific potential, if we do not make efforts to restore what has been lost—every person, who appeared on the rostrum of the meeting, spoke about this. The speakers turned the conversation from the analysis of specific processes, which had swept over the sphere of vital interests of the academy, to the area of determining the place and tasks of party organizations of the academy in the formed complex situation. The lost positions will have to be returned by titanic efforts, taking into consideration the fact that the communists had emerged from the social upheavals with large losses in their ranks. As well as taking into account the fact that the negative trends in the development of scientific research will progress.

In particular, S. Buka, a deputy of the Equality Faction in the Supreme Soviet of Latvia, who took part in the discussion of the communists of the academy, reminded those who had gathered about this. Being a candidate of sciences and, therefore, unable to remain indifferent to how the subsequent fate of science in the republic takes shape, the communist member of parliament focused the main emotional content of his statement on the analysis of the draft of the future republic law on science. The legal act, which is awaiting its turn in parliament, if it is passed in such a form, will promote the intensification of the destructive processes in science, the speaker urged, for it is obvious that not social interests guided the actions of the authors, who are members of the People's Front of Latvia, but personal gain—to acquire in the form of a legal act the legislative consolidation of their rights, included future rights, in case of the dissolution of the present Supreme Soviet.

Here are just a few of the arguments cited by him. In the draft the elimination of the academy of sciences entirely is easily divined, inasmuch as it is not represented here in any way. There is every reason to form the opinion that it will be replaced by a "ministry for science" in the person of the scientific council of Latvia, in which a cushy job will always be found for many of the present leaders, who have been successful for the benefit of a "free independent Latvia." In bureaucratism, judging from the rights, which the new structure is given, it will be entirely able to compete with analogous samples of the stagnation years. Here the plan, which has been ripening for a long time, for the purpose of integrating the system of the academy with VUZ science is also embodied, for, according to the assertion of E. Gren, director of the Union of Scientists of Latvia, "poor Latvia cannot maintain them together."

The changes, which will inevitably concern the very "filling" of scientific activity, are also well matched, S.

Buka believes, with the nature of the structural "reforms." Thus, the skills demands on the candidates for an academic degree are being changed completely, which will entail the complete review of the diplomas now existing in the republic. A number of other provisions make it possible to conclude that the new law will give freedom for the continuation on a new qualitative spiral of the "purge" among scientists just for the reason that their diplomas were received in another state. First of all humanities scholars, economists, and social scientists, who already today have gotten to know it well from "their own experience," will be subjected to discrimination. The present themes of scientific institutions, which will undergo strict selection in the exclusively national or, more correctly speaking, national separatist interests of the Latvian Republic, will undergo fundamental changes....

The strict time limit of the meeting did not allow S. Buka to present in full all the arguments, but even this was enough for each of those attending to fully realize what awaits him personally and science of Latvia as a whole already in the near future, under the conditions of an undoubtedly totalitarian regime. Therefore, the appeal of the deputy to unite the efforts of communist scientists around the development of an alternative draft of the law on science, which conforms to the norms of democratic civilized society, which would guarantee scientists real rights and freedoms for fruitful labor, received unanimous support. Another means of achieving this goal is the organization by the communists of the academy of a series of discussions, round tables, in order to subject to professional analysis the concept of the law on science, which was proposed by the parliamentary majority, and to formulate suggestions and remarks, which would make it as democratic as possible. Even the Equality Faction to the extent of its capabilities, while though they are limited, will see to it that they are stood up for during the passage of the law.

Other suggestions on how to raise as high as possible the efficiency of communists also emerged at the meeting. Thus, they agreed that in face of the impending common disaster—the wrecking of science—the profound realism of the idea of how important it is to preserve scientific and economic relations within the renewed USSR should be indisputable for the absolute majority of scientists of various political views. Therefore, the party organizations should precisely on the basis of this idea search for new supporters in order to halt by joint efforts the irreversible processes. In this connection it is also important to strengthen the contacts, which have been established in recent times, of party organizations of the academy of sciences with communists of higher educational institutions, where analogous negative trends have been maturing.

A consensus was also reached in the elaboration of steps on the social protection of personnel of science. In particular, they decided to establish formations, which are alternatives to expert councils and which would

defend in a well-reasoned manner the interests of scientists and entire collectives in instances, when voluntarism is allowed when refusing to finance their developments. It was deemed expedient to seek together with trade union and other public organizations possible means for the preservation of united collectives of science. Perhaps, the conditions for the establishment of small scientific and technical firms and enterprises and temporary collectives, which the scientific potential, which is becoming available as a result of the destructive "reforms," could join, should be found jointly. They supported the proposal to demand from the republic government the fulfillment of the promises on the special-purpose payment to scientists of compensation or on the decrease of the social tax, which was done in the Ukase of the President of the country with respect to creative personnel. Objections against the property of academic institutes becoming an object of steady concern of communists were also not forthcoming. In particular, a clear concept of the counteractions to any case of the squandering of property and premises, for example, in case of the establishment on its basis of various kinds of cooperatives and firms or its rental to organizations, the interests of which have nothing in common with the interests of the academy of sciences, is necessary.

The theme of the participation of communist scientists in the promotion of the Program of Actions of the Communist Party of Latvia merited a separate discussion. First Secretary of the Central Committee of the Communist Party of Latvia A.P. Rubiks, who participated in the meeting, emphasized that scientists would do an invaluable service to the party by having established their own group of lecturers. For none of the instructors of the Central Committee, the city party committee, and the rayon party committee will be able to compete with a scientist, who is distinguished by the ability to think originally and analytically, to evaluate professionally one or another urgency in interconnection with the occurring social processes, and to enter into well-reasoned polemics with a political opponent.

Incidentally, the very history of the development of Latvian science during the Soviet period could become factual material for scientist-propagandists in revealing the advantages of the socialist choice. A.P. Rubiks drew the conclusion. For the leap, which republic science made in its development during the postwar years, is truly imposing: from institutes in little suited premises, which experienced an acute shortage of elementary equipment, to the academy campus on Teyka, the complex of institutes in Salaspils, the microbiological research center on Kleysti, a new main library, a complex of scientific production buildings of the pilot plant.... The wish of the leader of the Communist Party of Latvia found support among those who gathered during the discussion and then in the decision, which by one of the points commissioned a group of experienced scientists to prepare for publication in the press materials devoted to the postwar stage of the development of Latvian science.

Developing the theme of the propaganda role of communist scientists in the present political struggle, the speakers agreed that it is necessary already today to become as familiar as possible with the work of the Communist Party of Latvia on the preparation of the new election campaign, which can be set at any moment. The showing of the true face of our political opponents, who did not disdain to use even science for their purposes, should be made the basis for it. Recalling recent events, the meeting participants spoke bitterly about how, for example, basing themselves on the unique knowledge of their colleagues who are ecologists, but knowledge deliberately not backed by economic calculations, many promoted workers from the People's Front of Latvia by deception earned themselves political capital from the problems of Sloka, Olayne, Ventspils, Liyepaya, and others. The "polluters" of the environment as before are poisoning our air, while the basic accusers, having well-paid positions in various state structures, now are writing and elaborating projects, while bashfully avoiding expressing their attitude toward the results of the activity of the new authorities.

An irreplaceable source, where scientists who are lecturers would derive convincing arguments for the promotion of the policy of the Communist Party of Latvia among the masses, is constant contacts with the deputies of the Equality Faction in the Supreme Soviet of Latvia. The meeting—incidentally, not the first one, in which communist members of parliament are taking an active part—convinced one of this. Along with S. Buka deputies E. Aboltins and K. Matveyev offered the meeting essentially prepared information material for work of this sort, which contains an analysis of the "masterpieces" of legislation of the parliamentary majority. It only remains to branch out among audiences in order to circulate over and over the information that thousands and thousands of residents of the republic are waiting for....

It would be possible to continue the list of the specific deeds, which at the last meeting the communists of the academy specified for themselves as urgent. But is there a particular need for this? For the author of these lines it was important to report to the reader the main impression from participation in the discussion of scientists who are party members: They are emerging from the social upheavals much stronger and ready to do the work of the party at the new, different qualitative spiral.

The statement of V. Kolosov, a member of the Central Committee of the Communist Party of Latvia and a senior scientific associate of the Institute of Physics, rang in concert with my observations. Sharing the impressions from his recent trip through the eastern lands of German, he directed attention to the slogan that was addressed by the German working people to progressive forces: "Only a dead fish swims with the current...." In the opinion of the speaker, the coming difficult insight of the people of the former socialist state, who through their lack of understanding were a toy in someone's hands, also lies in these words. In them there are also hopes for

the party of communists, which in many respects has been so unjustly slandered and cut up in the political battles. And the sincere desire to see it much stronger

again and capable of standing up for the interests of the people of labor. Do the people of Latvia have a long time left to come to the realization of this?

Georgia Considers Independent Patent, Licensing Service

917A0160A Tbilisi SVOBODNAYA GRUZIYA
in Russian 30 May 91 p 2

[Interview with Vasilii Konstantinovich Samkharadze, senior scientific associate of Tbilisi University, by Ketevan Amiredzhibi; date and place not given: "A New Occupation—Patent Agent"—first two paragraphs are SVOBODNAYA GRUZIYA introduction]

[Text] The changeover to market relations and the extensive appearance of Georgia on the international economic arena—these and other natural processes require fundamentally new approaches to the questions of intellectual property and, as a consequence of this, to the organization of patent and licensing work.

Today the subject of our interview is Vasilii Samkharadze, a senior scientific associate of Tbilisi University, the author of many inventions, and an experienced patent expert.

[Amiredzhibi] Vasilii Konstantinovich, in recent times very lively debates have been going on over patent and licensing work. There are opinions on making this service in the republic separate and independent of the activity of the State Committee for Inventions and Discoveries attached to the USSR Council of Ministers. You will agree that the question is now very urgent—after all, the times, when our domestic market will become an arena of activity for many foreign firms, private enterprise will gain strength, mutually advantageous cooperation will be developed, and so on and so forth, are not far off.

[Samkharadze] All this will actually be so. Market relations and the partial privatization of the state sector of the economy into a private, so to speak, personal sector will create favorable conditions for an economic upswing, as a result not only state-private subdivisions, but also quite a number of, as they say, independent minds will be drawn into the sphere of new interrelations. Thus, the state monopoly of intellectual property, particularly industrial property (inventions, industrial prototypes, trademarks, and others), will be displaced in the direction of the personal sector.

Initiative, energy, enterprise, and the ability of develop and embody technical ideas quickly at all times were motive forces of progress. But it is necessary to secure the right of priority of one intellectual achievement or another with the appropriate protective document. We do not have such a practice. The attainment by the privatized sector of the international level will urgently require the broadening of the rights of protection of inventors and, in particular, the protection of these rights in other countries. Foreign citizens, whose scientific and technical achievements will be used on the territory of Georgia, also receive analogous rights. This is also one of the conditions of the elimination of state jurisdiction over patent and licensing work.

The appearance of the independent patent and licensing service of the republic on the world arena is impossible without the official joining of international associations—the Paris Convention and the World Intellectual Property Organization. This will give **legal and simply natural persons** the right to the foreign patenting of their achievements. Such a means in practice eliminates their free use, copying, and dissemination for the purpose of deriving a commercial advantage. The status of protection is also specified for foreign entrepreneurs on our territory with the rights of reciprocity.

A very important question from the standpoint of the effectiveness of work is the organization of the institution of patent agents and patent courts. This, it can be said, will be a milestone in the practice of domestic patent studies.

[Amiredzhibi] A patent court, as far as I known, is an organization that engages in legal proceedings on patent cases that involve the right of exclusive use of types of industrial property. But what are the functions of patent agents?

[Samkharadze] Experienced, highly skilled specialists, who are patent experts, have passed the state examination and have received a certificate, which attests to the right to engage in patent and licensing activity, and have been registered in the patent department, can have the status of patent agent. In other words, in contrast to certified patent experts they should undergo state registration, having a certificate. This is a completely new specialty for us, just the same as that of, for example, a broker and a dealer.

Patent agents render professional services to **legal and natural persons** in the area of patent and licensing activity with regard to the study of their creative achievements for patentability and patent purity, draw up application materials for various types of industrial property, submit applications to the appropriate patent departments, and conduct correspondence with the patent department with regard to the examination of applications, the granting of a patent, and the keeping of the patent in force. They draw up the materials of foreign and international applications and conduct correspondence with regard to them. They also engage in the study of the level of technology and market conditions with regard to types of industrial property and in their examination—in short, they perform much complicated work, protecting the interests of their clients as lawyers in the country of residence and abroad, both in the patent department and in the patent court.

National patent legislation envisages without fail the performance of patent and licensing activity only through patent agents of the given country. Ignorance of this can lead even to the loss of the right to one's achievement or to strict international sanctions. For example, at one time the Soviet Union built in India a metallurgical plant, the technology of which was checked

for patent purity only with respect to India. The developers of the design documents overlooked the fact that the norms of patent law of Great Britain also applied to Indian territory. As a result major compensation had to be paid for the infringement of the rights of the patentee.

The activity of state structures—the patent department, the examining agency, the patent court—as well as patent agents is of a competitive nature. It is natural that the effectiveness of the work of each unit in such a case depends only on properly organized patent and licensing activity and the high professional level of specialists.

[Amiredzhibi] Vasily Konstantinovich, what is now required for the organization of independent patent and licensing work?

[Samkharadze] First of all it is necessary to specify the conditions of the joining by the republic of international conventions, unions, and organizations in the area of industrial and intellectual property. To stipulate the evaluation criteria and the list of types of this property, to choose a system of examination and the requirements for keeping protective documents in force. To establish a list of legislative acts, directions, and instructions, which require drafting. To develop standardized materials on the regulation of the activity of patent courts and patent agents, and so on. The tasks, it goes without saying, are not easy, the establishment of competent working groups of specialists, perhaps, even at the international level will be required.

Georgian S&T Organizations Face Budget 'Crisis'

917A0160B Tbilisi SVOBODNAYA GRUZIYA
in Russian 30 May 91 p 4

[Article by Inga Bobrova under the rubric "Science for Production": "The Intellectual Product on the World Market"]

[Text] Independence, sovereignty, the restoration of statehood—all these words, which already today are such customary and so easily pronounced ones, bear not only the slogan of liberation. Politics and economics, science and culture, being interwoven, have been drawn into this complicated and difficult process. The most urgent need for the quick and optimum settlement of all questions and the elaboration of promising directions of the restoration and development of the potentials that exist in the republic are at hand.

These questions were at the center of attention of a conference, which was recently held in the Ministry of Science and Technology of the Republic of Georgia, with the participation of executives of the largest scientific research and planning and design institutions and scientists.

Prof. Irakliy Zhordaniya, minister of science and technology of the Republic of Georgia, delivered the opening speech.

The discussion of the critical financial situation of scientific institutions of the republic became the theme of the conference.

The development of the scientific potential of the republic governs its progress. Without the appropriate financial support and a solid material base it is impossible to talk about any further development of science.

Today 248 scientific institutions operate in Georgia, 67,000 people are employed at them. Due to the refusal of union ministries and departments to finance their institutes, which are located on the territory of the republic, the real threat of their closing or significant reduction is arising. The acute shortage of republic assets for scientific research is facing the Government of Georgia with the need for radical reforms in the area of science.

"We should direct our attention to the development of priority directions for Georgia, which are necessary so that in the immediate future it would be possible to appear with specific proposals on the world market," Georgiy Nizharadze, deputy ministry of science and technology of Georgia, stressed in his statement. "It is possible to include several principles here. First of all, the development and devising of new highly efficient technologies on the basis of ones that are already available and are rated quite highly. The export of raw material resources of the republic in protogenic form is not profitable for us. We can and should develop processing technologies, directing our attention to the best world standards."

The very scientific and technical potential of Georgia, by means of which an intellectual product, which has an outlet to the world market, should be developed, is of colossal value. The ministry will promote in every possible way the development of an extensive network of joint ventures and associations and the expansion of the participation of Georgian scientists in international programs of the development of science.

The existing system of state financing, it was noted at the conference, does not ensure the effective use of our potential. In connection with this we intend to introduce a new system of the financing of scientific research, which provides for the allocation of assets for specific themes. This will be accomplished on a contractual basis within the framework of the principles of competitive selection. Subsequently it will be necessary to establish a republic innovation bank. Thought should be given to the establishment of special funds for the needs of the development of science in individual ministries, departments, and offices of the republic, which is customary in all civilized countries.

The need for the radical change of the existing system of the organization of the experimental base of scientific research and planning and design institutes is beyond doubt.

In the future, for the solution of the problems of speeding up the development and assimilation of innovations the establishment of a special service for the material supply of republic scientific institutions in the conducting of research and experiments and for the development of test specimens and prototypes is deemed expedient. Proposals on the establishment of an information bank, in which all the data on the problems and capabilities of production enterprises, associations, and scientific organizations will be concentrated, are being formulated.

We are seeking intensively means of recovering from the present crisis so that the scientific potential of the republic would incur the minimum losses, Minister of Science and Technology Prof. Irakliy Zhordaniya noted when summarizing the work of the conference. We hope to go to the Government of Georgia with a package of specific proposals in the immediate future.

Estonia To Develop Own Patent Legislation

917A0166A Tallinn SOVETSKAYA ESTONIYA
in Russian 28 May 91 p 1

[Article by a SOVETSKAYA ESTONIYA correspondent: "The Patent Should Be Reliable"—first paragraph is SOVETSKAYA ESTONIYA introduction]

[Text] Yesterday a seminar, at which Moscow and Estonian patent specialists discussed a large number of questions that are of enormous importance for the development of the economy under present conditions, was held in Tallinn on the initiative of the Volinik Patent Bureau. "Patent Examination Under the Conditions of the New Legislation," "The Legal Protection of Industrial Prototypes...", "The New Law of the Estonian Republic in the Area of the Protection of Copyrights"—here are a few themes of the reports.

Aime Vysu, Adviser for Questions of Industrial Property of the Ministry of Economic Affairs

If we intend to establish an independent state, we need our own laws on industrial property. Patent examination is an expensive business. In this and other matters we are connected with the corresponding organizations of Moscow. How this connection should be realized is also a discussion topic. The documents are at the stage of preparation, and now is the right time to talk over all the aspects of this quite complex process so that in sovereign Estonia as few surprises as possible would await us. It is quite difficult to establish in the republic its own system

of examination, and it is necessary to use all opportunities for mutually advantageous relations.

Aleksandr Korchagin, Director of the All-Union Scientific Research Institute of State Patent Examination

Today the basic transformations that are occurring in the economy are connected with the processes of the privatization of property. Whereas until recently inventions, the most valuable product of human creative activity, belonged to the state, in the course of the privatization of property first of all the inventor or the person, natural or legal, to whom the inventor will transfer the rights to an invention, should become and by law will become the owner of the invention. The patent for an invention also gives precisely the right of property to the person, to which it can and should belong. And, of course, to own this property and to use and dispose of it in his own interests, first of all economic interests.

In connection with this serious changes are occurring in the economic structures of the country, and, of course, they also require a fundamentally new legal basis.

Our new patent legislation is based on gained world experience and takes into account the trends that are reflected in the draft of the international agreement on patent law. This agreement beginning on 3 June will be considered in The Hague at a diplomatic conference.

A question inevitably arises for the republics that are striving for sovereignty: Are they to draft their own patent law, inasmuch as this law is a mandatory attribute of any state, and, if they are, how are they to take into account the interests of the owner, who is interested in the broadening of the economic sphere of the activity of his rights? Moreover, it is necessary to take into account the interests of both the national owner, who is on the given territory, and the foreign owner. In order to make investments on a specific territory, he should be sure of the protection of his right of property by a patent. The patent should be reliable—then there will be a basis for the making of these investments. It is these questions that we will also discuss at the seminar, of which the Volinik Patent Bureau was the initiator. Its director, Ludmila Gans, is the initiator of this work in Estonia, and owing to her a good relationship exists between our institute and Estonian colleagues.

We are trying to take the gained experience into consideration, so that specialists in the area of economics would not make mistakes during the reforms that should inevitably take place on the territory of the sovereign republics.

Science Leader Discusses Secrecy, Past Policy Shortcomings

917A0169A Moscow ROSSIYSKAYA GAZETA
in Russian 10 Jul 91 p 3

[Interview with Prof. Dmitriy Andreyevich Mineyev, founder and president of the RSFSR Academy of Natural Sciences, by Issak Glan under the rubric "Science"; date and place not given: "Into What the Secrecy Mania Has Turned for Scientists. A Conversation with the President of the RSFSR Academy of Natural Sciences"—first two paragraphs are ROSSIYSKAYA GAZETA introduction]

[Text] Constitutional Democrat V.I. Vernadskiy, a member of the Provisional Government, after the October Revolution left for his birthplace, the Ukraine. What science there is there—he would save his life.... But in Kiev the situation was even more terrible than in Petrograd. And at that time there (!) Vladimir Ivanovich accomplished what he had dreamed about for many years—he established the Ukrainian Academy of Sciences.

Russian history abounds with such paradoxical examples: The years of social discord and terrible danger, when the very existence of the country is called into question, also become a time of spiritual elan. Therefore, not by chance have new names come to light in politics, economics, and current affairs writing in the last six years. Have they appeared in science? The conversation with Prof. Dmitriy Andreyevich Mineyev, founder and president of the RSFSR Academy of Natural Sciences, began with this question.

[Mineyev] Original, independent scientific thinking is less dependent on the weather outside, he says. Russia was never wanting in talented people of science. It is another matter that they were not always able to work and could not show their worth and their names often remained unknown. Under different conditions they could have. Here is a sad example for you, but nevertheless we have the right to be proud of it: Eighteen Nobel Prize laureates, children and grandchildren of the first wave of emigration, live abroad. In our country the social and moral conditions are such that it remains to be amazed that anything survived. And now the conditions have appeared to revive Russian science. To try to revive it.

As is known, the leadership of the USSR Academy of Sciences specifies the ideology of the development of all basic science in the country. But only 10 percent of the scientific potential of the RSFSR is at institutes of the USSR Academy of Sciences. This impoverishes the possibilities of science and firmly establishes the monopoly on it of a small group of scientists. What kind of competition can there be given a single academy? But an important discovery is always competition: It changes the set of values and overthrows some authorities.

[Glan] As I understand it, the Academy of Natural Sciences—and now others are also being established—is one of the attempts to overcome the monopoly in science, is it not?

[Mineyev] Absolutely correct. But this is also difficult now. At several academic institutes it was simply prohibited to hold an election to our academy. Someone began to say about it, which had not yet been established and had not yet begun to work, that it is not needed and is even harmful. What is behind this? The same fear of what is new. The more petty the scientist, the greater the fear. Prominent scientists are not afraid of rivalry. They welcomed the establishment of our academy, understanding that any effective structure will only enrich science. Not without reason were nearly all the vice presidents and several executives of departments of the USSR Academy of Sciences and many well-known figures of science elected to our academy. I will name just a few names: Sergey Averintsev, Yevgeniy Velikhov, Vitaliy Goldanskiy, Yuriy Zolotov, Nikolay Laverov, Rem Petrov, Aleksandr Prokhorov, Yuriy Prokhorov, Svyatoslav Fedorov, Boris Raushenbakh, Yevgeniy Chelyshev. Strictly speaking, we do not have differences with the Big Academy. Moreover, we will perform several most important jobs jointly. Common programs have been drawn up and are being financed.

There are also obstacles of a social quality. The tie of basic science with "defense." The policy of secrecy. For the most part this applies to physics and chemistry, which were financed by wealthy employers—the Ministry of Defense and the Ministry of Medium Machine Building. This part of science was a most important and mandatory component of the military-industrial complex, owing to which, incidentally, physics and chemistry incurred fewer losses, there the achievements are most appreciable. But a large and—I dare to assert—most interesting part of the same physics, chemistry, and even geology to this day remain secret. The most important jobs and materials, even ones that are not of strategic importance, are classified. And not just in physics and chemistry, but, very likely, in all the natural science.

The hypertrophied system of secrecy became disastrous for science and did our country a poor service. And the consequences for scientists! The impossibility of informing the world about their research (and their troubles!) and of giving life to new problems and a new direction—all this disillusioned and took away the desire and possibility for new, more in-depth research. Many went into no less interesting themes and teaching work. Some emigrated. I understand that there will always be the commercial secret and the state secret, but it is time to abandon supersecrecy and the notorious "right of entry."

But what about supersecrecy outside defense sectors? This, in essence, is a version of feudalism. Scientists cease to belong to themselves. They—without any "shying"—are isolated from not only foreign, but also their own colleagues. They and their achievements prove to be

excluded from the world scientific process. A "closed society" is for many scientists not a metaphor, but everyday life.

[Glan] With what did you begin the formation of the academy?

[Mineyev] We decided to assemble significant, large-scale, practically minded scientists and to give them an opportunity to stimulate scientific work. First of all I have in mind the "people of the sixties." These are people who in the 1960's made themselves known as prominent scientists and made significant inventions and discoveries, people, about whom it is possible to say: national wealth of the country. It is possible to say that the academy is the last, considering their age, chance of the "people of the sixties" to consolidate and continue the cause begun by them.

It was simple to find them. We knew the authors of scientific discoveries and new scientific directions. Since 1957 the USSR State Committee for Inventions and Discoveries and the Presidium of the USSR Academy of Sciences have kept the USSR State Register of Scientific Discoveries. The most important discoveries of Russian scientists attracted our attention. The leading authors of these and other unique worked were elected to our academy at the Constituent Congress of the scientific community in August 1990. Thus the backbone—the first 133 Russian academicians—appeared. The Association of Authors of Scientific Discoveries was established under the Academy—in it there will be thousands of members, the main creative potential of the country.

[Glan] And will this signify the revival of Russian science? But it is well known that money is needed for the implementation of an idea. The academy is a public organization. Who will give it assets?

[Mineyev] Assets were also required for the birth of our academy, an organization that is not a state one and was established not on the instructions of an administrative department, but on the initiative of scientists themselves. For the formation of its structures, affiliates, which, incidentally, already exist in many cities of all regions of the RSFSR, other organizational matters....

[Glan] For payment for the title of academician....

[Mineyev] Now there are a very lot of things, there is not that. Russian academicians themselves will pay membership dues at the academy. As is done throughout the world. The money will be spent only on research. Who were the first to give them? The same "people of the sixties." Several of them were lucky, they reached the administrative heights and became executives of research institutes and centers. They also became our first founding sponsors. The fact, in my opinion, is a worthy one, which testifies to the undying brotherhood of scientists. An opportunity to help talent (and the certainty that the assets will be used most effectively) and to support important and urgent research appeared, and people immediately responded. In all there were

more than 50 patron organizations, which made payments to the initial fund of the academy. Within one to two months the first 600,000 rubles were already in its account. Thus, they believed in the academy and appreciated its concept, the mechanism of work, the bureaucratic obstacles, and simply the interference in the way of the embodiment of the idea. I think that in the future financial difficulties will not arise for us. A number of organizations are already offering us assets. Major programs, undoubtedly, should be financed by the Russian state—on the basis of open competition. They have also taken an interest in our many programs abroad. So that we also expect foreign investments.

[Glan] Is it possible to name the programs themselves?

[Mineyev] They are now being formulated, while several are already being implemented. The programs are diverse and encompass the development of not only science, but also culture and education. We proceeded from the fact that the academy is the highest form of the organization of scientists. Therefore, the level of research in scale and importance should be equivalent to this form. Here are the directions: "Science, Culture, Education of Russia," "Demography," "Ecology," "The Raw Material Base," "Medicine." I will name the specific programs. Education. Together with Moscow State University we plan to restore the old university on Mokhovaya, which was at one time not only an educational institution, but also the center of civilian culture of Russia. Moscow University is the pride and glory of the country. But now various departments have stolen the buildings, which are located in the university district, much has been destroyed and burned. No state allows itself to treat this way the cradle of its history and culture.

Of the scientific and technical programs: the ecology of the Barents, Black, and Baltic seas, the saving of the fresh waters of Russia, the revival of the Volga, which due to unwise management was on the verge of ruin.

I want to talk separately about the analysis of the state and prospects of development of the mineral raw material base of Russia, for this theme is closer to me as a geologist. Unfortunately, during the years of Soviet power the outlying regions of the country geologically were studied more than Russia proper. The outlying regions indeed! We sought mineral resources in neighboring countries with much more vigor than in our own republic.

The educational program: the publication of a multivolume series of the Russian encyclopedia, in which, for example, the following volumes will be included: *Narody Rossii* (The Peoples of Russia), *Rossiyskaya nauka* (Russian Science), *Kultura* (Culture), *Khramy Rossii* (Churches of Russia), *Russkaya armiya* (The Russian Army), *Russkiy flot* (The Russian Fleet), and others. Separate volumes will be devoted to all the peoples who inhabit our Federation—this is an enormous program.

[Glan] How will all this be accomplished?

[Mineyev] Temporary (small) institutes for individual problems will be established on a contractual basis. Several have already been established. We are wide open for joint work with existing large and small scientific enterprises and informal scientific organizations. I think that we will not have problems with financial support, all the programs are vitally important for Russia. The study of its mineral resources will be financed by the government of the republic. The publishing and ecology programs will be financed by its state committees and Supreme Soviet. Foreign partners have displayed an interest in a number of studies—we will perform work together with the Scandinavian countries on the preservation of the Baltic Sea and jointly with the United States on the saving of fresh waters. Cardiologists of Russia and Germany are undertaking the study of the morphology of the heart. In general, everything is practicable. One of the most important programs—the restoration of the old university on Mokhovaya—will begin this year. It is necessary to hurry. To attract talented young people and to absorb them with the work. The “people of the sixties” should have time to pass on the torch.

Opinion Poll on Public Attitudes Toward Science

917A0168A Moscow IZVESTIYA (Union edition)
in Russian 25 Jun 91 p 4

[Article by Doctor of Philosophical Sciences S. Kugel and Doctor of Philosophical Sciences I. Mayzel (Leningrad): “Science in the Mirror of Sociology”]

[Text] What does science know about itself? About its rating among broad circles of the public? About the opinion of the people?

For the first time in our country such a detailed study was conducted by the Institute of History of Natural Science and Technology of the USSR Academy of Sciences jointly with the section of the sociology of science of the Northwestern Branch of the Soviet Sociological Association.

The first stage of the study (late 1990-early 1991) was of an exploratory nature in Leningrad and Petrozavodsk. Representatives of the basic social groups of the urban population were covered by the poll. Then for the more thorough clarification of the attitude toward science of future scientists and specialists 400 undergraduates of higher educational institutions of Leningrad and of Petrozavodsk State University were additionally polled. It was deemed necessary to take into account the fact that in recent years sharp criticism of science has been heard from the highest rostrums in our country.

It was important to establish whether only those people, who took the rostrums, hold such a position or whether this is a quite widespread and weighty opinion. The analysis showed convincingly that the attacks on science and the attempt to make scientists responsible for the numerous misfortunes in the development of our country are by no means based on some “unanimous

position of the people.” In reality a far more weighed, differentiated attitude of the population toward science comes to light. The majority of respondents (52 percent) proceed from the fact that some sort of unambiguous evaluation of science is illegitimate: Science entails positive consequences in some cases and negative consequences in others. Second place—42 percent—belongs to those people whom it is possible to call “scientist-apologists.” They see in science an exclusively positive factor.

The group of opponents of science (they see in it only a negative element) is in third, last place and constitutes an obvious minority—5.5 percent. This opinion is dictated most often of all by anxiety with regard to the catastrophic deterioration of the natural environment. The blame for this process is placed on science, while the responsibility of the leadership of the country, the administrative command system, and the military-industrial complex simply falls from the field of view.

A significant portion of the respondents connect their critical opinions about science precisely with its deplorable state in Soviet society. In other words, criticism of society as a whole and of its attitude toward science in practice lies behind the criticism of science.

What is the attitude of the respondents toward individual fields of science?

The share of respondents, who are certain that the positive consequences of the influence of such sciences as physics, psychology, and sociology on society outweigh the negative consequences, came in Leningrad to 55.8 percent, 63.9 percent, and 56.4 percent respectively. The share of those, in whose opinion the negative consequences in the given fields prevail over the positive consequences, everywhere does not exceed 6 percent. Among a portion of the respondents an “image” of physics, chemistry, psychology, sociology, and particularly genetic engineering had not formed. The share of those who found it difficult to answer the question of the social consequences of scientific activity in the enumerated fields came in Leningrad to from 17.2 percent (psychology) to 34.9 percent (genetic engineering). This testifies to the need to increase the scientific education of society.

The evaluation of research in the field of nuclear power engineering obviously stands by itself. First of all the share of those, who are certain of the harmfulness of the results of this research, is very large. In Leningrad it comes to 31.6 percent. This, undoubtedly, is connected with the very fact of the existence of a nuclear power plant located in the vicinity of the city; in Petrozavodsk it comes to 39.0 percent.

Very significant is the opinion that first of all the following directions of scientific research should enjoy preferential financial support: ecology—75 percent, medicine and pharmaceuticals—73 percent, economics—63 percent, problems of natural disasters—53 percent,

agricultural problems—47.4 percent, computer technology and information science—42.0 percent.

Here is the generalized opinion: Too little money is being spent on science as a whole (47 percent of the respondents).

A large portion of the people are convinced of the abstract value of science as a social phenomenon, but not of the value (quality) of the work of modern scientists. The opinion about the adherence to principles and moral conviction of researchers is very low, 56.0 percent of the respondents expressed the opinion that scientists think more about their own abstract problems than about the interests of simple people; 48.2 percent believe that

scientists are simply satisfying their own intellectual curiosity at state expense. And only one in four states firmly: The interests of scientists are aimed at getting the country out of the crisis. Nevertheless, more than 80 percent of the respondents recognize the desirability and necessity of scientific methods when settling political and economic questions. At the same time only 16 percent believe that these methods are used systematically, about 30 percent believe that they are used from time to time. Just as many more believe that this use practically does not exist.

Thus, having peered at the mirror of sociology, science should understand that it has popular support.